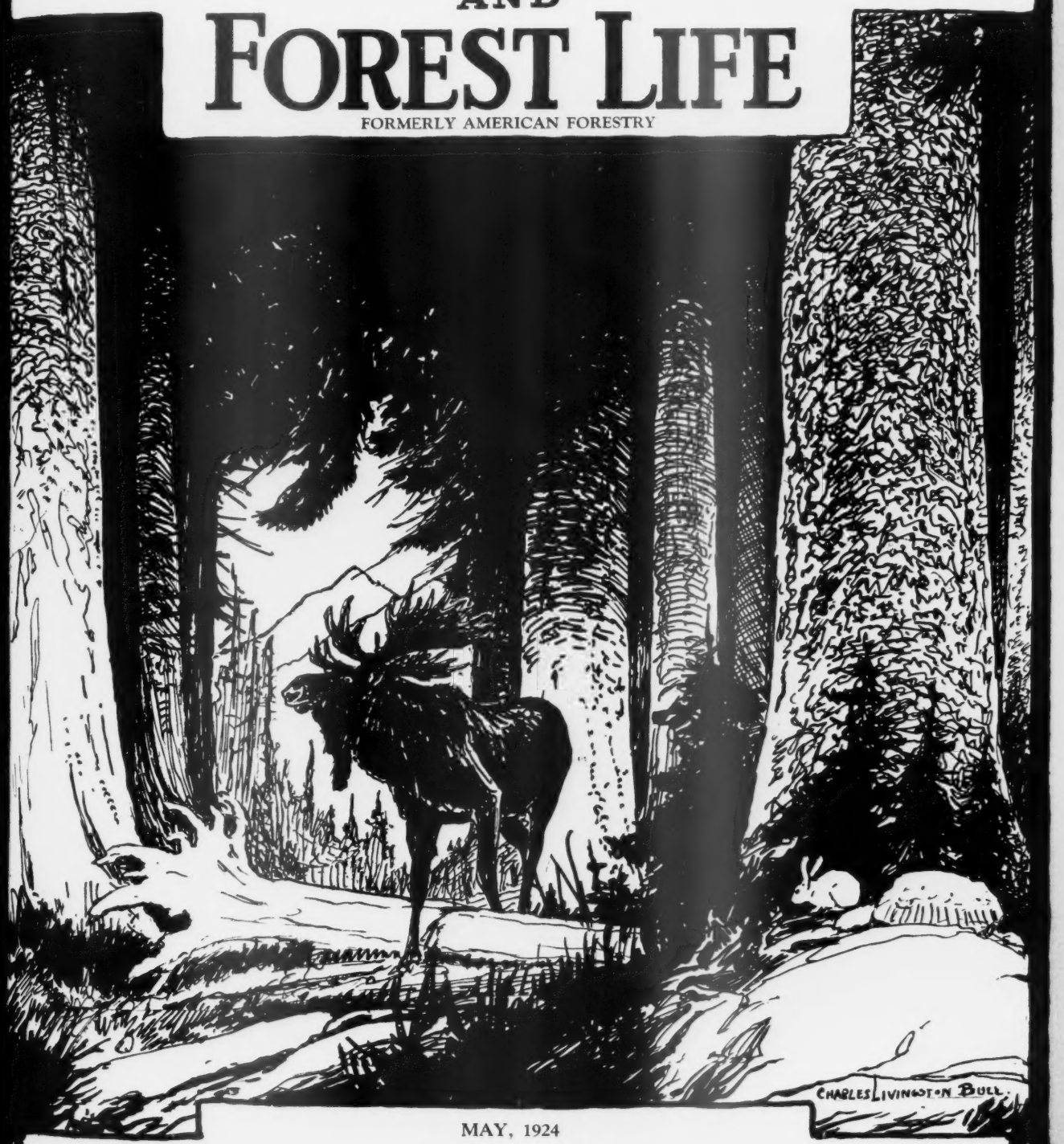
AMERICAN FORESTS AND FOREST LIFE

FORMERLY AMERICAN FORESTRY



MAY, 1924

DANCING BIRDS : : THE DEVIL'S FLOWER GARDEN
WANTED—A DEPARTMENT OF CONSERVATION

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The American Forestry Association

Washington, D. C.

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The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNAL FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

AMERICAN FORESTS
AND
FOREST LIFE

(Formerly American Forestry)

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor — L. M. CROMELIN, Assistant Editor

Vol. 30 — MAY, 1924 — No. 365

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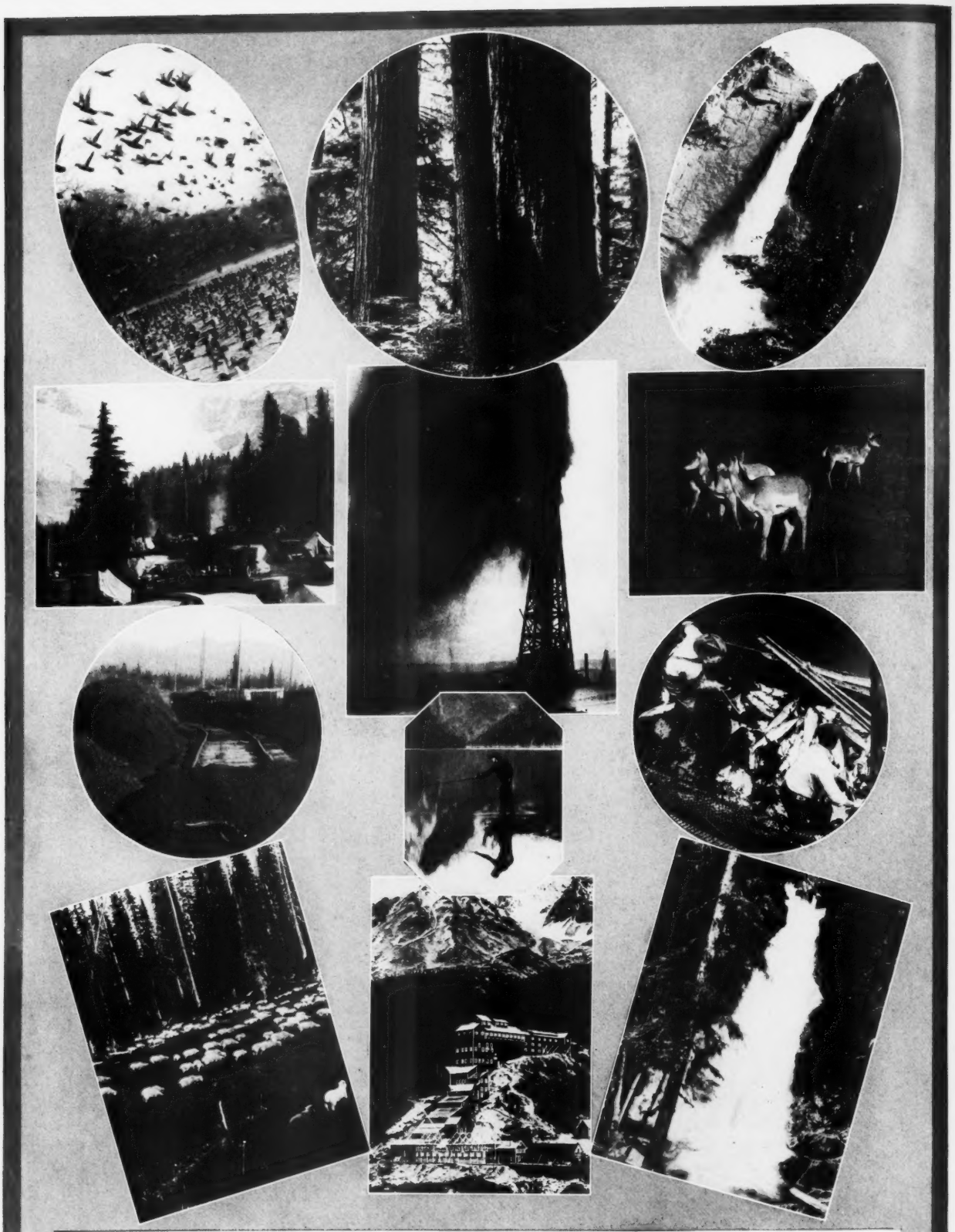


THE AMERICAN BANK OF NATURAL RESOURCES

In which Nature deposited to our credit, as a heritage to a new world, forests, water, water power, coal, oil, minerals, forage, fish, game, birds, recreation, natural scenery. From these deposits have come our wealth and prosperity. Are we going to "break the bank," or by a wise national policy of conservation keep the principal intact for the use and enjoyment of ourselves and our children?

AMERICAN FORESTS

VOL. 30 MAY, 1924 No. 365

Wanted—A Department of Conservation

By Harris A. Reynolds

"Put all your eggs in one basket and then watch the basket."
—*Andrew Carnegie.*

THE revelations of irregularities among high officials trusted to protect the public interest call for sober thought concerning the conservation of the natural resources still in public ownership. Unless something is done soon to establish a practical conservation policy in respect to these resources, there will be little left to conserve.

Throughout history, weak or unscrupulous men have found their way to positions of trust and influence. We decry these conditions, but we do not always profit by our experiences. Through public inertia and indifference, we permit situations to develop in our public institutions which make the way easy for the potential transgressor. We frequently fail to apply the same standards of conduct in the administration of public property that we insist upon in private undertakings. The present situation in the Department of the Interior is a shining example of how we create an agency and then allow it, like a rudderless ship, to drift without a fixed policy.

The Department of the Interior, perhaps more than any other department of the government, is charged with the administration of many unrelated activities. It is given control of a large part of the most valuable material possessions of the nation—its natural resources. Because of that fact it is subjected to all the wiles and secret plots of selfish interests which seek to enrich themselves from the public storehouse, and as a result the department has become a sort of incubator of public scandal. Like the old-fashioned soup pot, everything that is not wanted by another department or seems to be left over is dumped into it. Whenever it is allowed to stand for a period without public scrutiny, the process of fermentation sets in and we have to skim off the scum.

It is fair to inquire just what natural resources the public still owns and by whom administered. The public lands, aggregating over half a billion acres, which still contain much of the timber, coal oil, and other minerals in the country, are under the Department of the Interior; the National Forests, comprising about 156,000,000 acres, are controlled by the Department of Agriculture; the fisheries are under the Department of Commerce; the naval oil reserves are held by the Navy Department, and other natural resources of minor importance are to be found in still other departments. The water powers are under the control of a separate commission. Each department has its own ideas of conservation and management of the property under its care, but there is no general policy by which the work of these separate agencies is co-ordinated. The failure on the part of the government to bring all of these natural resources together in a single department, where they can be co-ordinated and each given its proper place in a general conservation policy, is the source of inefficiency, loss, and scandal.

In the Department of the Interior is the National Park Service, which makes an honest effort to stand for complete preservation.

"Conservation"

TWENTY years of conservation talk and conservation effort have failed to clear up the public mind as to what conservation of our natural resources really means in terms of public policy. Mr. Reynolds' timely article, printed herewith, presents an appropriate occasion to state our conception of the term. The trouble, we believe, is not with the word conservation, but with the public's understanding of what it implies. Conservation means use—not unrestrained use, but regulated use. As applied to natural resources, we prefer to think of it as that use of a given resource which will yield the highest public benefits without impairment of inherent productive values.

Conservation as exemplified by National Forests, for example, means wise development of these areas as permanent producers of forests, forage, water, and other economic values. Conservation as exemplified by the National Parks means the preservation and use of these areas as museums of nature. Wild-life conservation denotes the preservation of birds and wild animals for the enjoyment and benefit of the people or for the production of fur or food. Thus, in the case of every resource, conservation contemplates that form of use which will serve, permanently and without impairment of principal, the greatest number of people and the best welfare of the nation. That conservation, as a broad and effective national policy, having to deal with a great variety of natural resources, demands proper co-ordination of the uses to which the different resources are best adapted, goes without saying.—EDITOR.

In sharp contrast to this Service is the General Land Office, in the same department, which is responsible for millions of acres of timber lands, but which has no policy or organization for the protection of that timber from fire and other enemies. There are millions of acres in the interior of Alaska, for instance, that are receiving no protection from fire, which has swept over thousands of square miles. Yet the government is spending millions of dollars in road and railroad building in that territory with the hope that the country may be developed by permanent settlers. The same bureau still controls millions of acres of grazing lands without an effective policy, while the grazing lands in the National Forests which are under the Department of Agriculture constitute the chief source of income from those areas.

The antelope on the public lands in eastern Oregon, perhaps the largest herd of these picturesque animals still remaining in this country, are facing extinction from lack of protection of their range, which is embraced in the public domain under the Land Office, Department of the Interior. Grazing of live stock on the land in question is uncontrolled and forage has been depleted so seriously that starvation threatens the antelope in adverse seasons. Already numbers of them have starved to death.

In the Yellowstone Park district the problem of providing winter food and winter range for the elk—a grievous problem of long standing—has not yet been satisfactorily adjusted. Here is an outstanding example of divided responsibility, in which the National Park Service, the Biological Survey, the Forest Service, and the State of Wyoming are involved. That the Park Service in the Department of the Interior and the Forest Service and the Biological Survey in the Department of Agriculture have failed to co-operate effectively is well known by those in close touch with the situation.

The Bureau of Education, in the Department of the Interior, is engaged in the breeding of reindeer in Alaska—a job that should naturally fall to the Department of Agriculture.

Interdepartmental jealousies are among the chief reasons why our natural resources have not been given adequate protection. For instance, even though the Department of the Interior is not equipped with an organization for forest-fire prevention, it is unwilling to turn over the timber lands still in its possession to the Department of Agriculture as National Forests. It is only through the foresight and determination of such men as Grover Cleveland and Theodore Roosevelt, backed up by the conservationists of the country, that our present National Forests, taken from the control of the Department of the Interior, are today under efficient management. The time is now at hand when all of the timberland on the public domain, except the National Parks, should be made National Forests. With a timber shortage confronting the nation, the people are no longer content to leave these timbered areas unprotected.

It is a well-known fact that many of our resources are deteriorating under our present system of management. The fisheries of Alaska are waning because Congress fails to provide adequate appropriations or authorizations for the execution of efficient regulations by the Department of Commerce. The game of Alaska is likewise in danger of extinction because of weak and ineffective measures for its protection. There the prospector is permitted to kill game for food at any time, and any one who wants a week's hunting can have it by simply turning prospector for that week. Even the 2,200 square miles in the Mount McKinley National Park, which is supposed to be properly protected from forest fires and from poaching, is guarded by only two men, due to the failure of Congress to provide sufficient funds for proper administration.

The only reason such conditions prevail is the fact that the people do not know how their resources are being managed. Had there been a definite policy regarding the oil reserves, such as exists in the management of the National Forests, the Teapot Dome catastrophe would not have been possible. We are supposed to have a sound policy for the reclamation of arid lands, yet this work has in some cases gone ahead of the agricultural needs of the country, with the result that water-users are, and for many years have been, unable to meet their payments. Should farmers in other sections not only have to bear the losses due to overproduction, but through taxation also help pay for the mistakes of the government in its wild rush to develop the country?

In reorganizing the departments of government, there is danger, unless the public has definite ideas of what it wants, that the change will merely effect a redistribution of bureaus without substantial improvement in the organization of the bureaus themselves or the policies under

[*Continued on page* 308]

The President Speaks on Recreation

In a statement calling the attention of the nation to the great outdoors, President Coolidge urges a national policy which will co-ordinate all agencies devoted to open-air recreation. Emphasizing the importance of this matter, he has appointed a committee to carry it through, consisting of Secretary Weeks, of the War Department; Secretary Work, of the Interior Department; Secretary Wallace, of the Agricultural Department; Secretary Hoover, of the Department of Commerce, and Assistant Secretary Roosevelt, of the Navy Department. Quoting from his statement, the President says:

"Though all are concerned in this matter, the lead must be and should be taken by the national government. Our national government is already concerned in many phases of it, but in an incoherent manner. In the administration of National Parks, National Forests, wild-life reserves and unreserved domain, the government holds almost unlimited opportunities for this form of public service. The function of the federal government in the construction of highways, in the study of the propagation and protection of game animals, birds and fish, has a very decided bearing upon the recreational facilities open to our people."

Game in the Southern Appalachians

By Verne Rhoades

Pisgah National Forest and Game Preserve

A SHORT time age I went into a movie theater, lured there by the announcement that films of African wild life were being shown. It may be my best chance, I thought, to see how some of the animals of Africa look and live in their own valleys and on their own table-lands. Like millions of other Americans, it will not be my lot to see them in the flesh in their native environment.

To my way of thinking, the picture was a great success. For a brief time I was transported to the "Dark Continent," and I saw there birds in countless numbers, darkening the skies as they flew. I thrilled at the sight of a herd of elephants marching ponderously through the brush, their tusks gleaming white in the patches of sunlight. I saw giraffes peeping alertly over the thorn trees and watched them awkwardly gallop away when disturbed; baboons went down to drink at the communal water-hole and trooped back to the forest as if under orders; the rhinoceros lifted his long snout into the air suspiciously and charged swiftly through the shrub; lions slipped through the high grass, their manes stiff and their tails switching menacingly; ostriches, the Woolworth towers of bird life, raced across the waste to escape their pursuers; ugly warthogs fled from the camera man, but not before one might have almost numbered their long bristles; hartebeests, springboks, gazelles, and dikdiks, the smallest of antelopes, came within vision and fleetly disappeared. It seemed at times as if all the land from lens to horizon was full of birds and beasts. It was their kingdom and they appeared content to rule without the interference of man.

When the reel was finished and I stepped out into the light of day again, I straightway fell to meditating on the status of wild life in this country, particularly in the Southern Appalachians. What was here when Columbus rocked his eggshell across from Portugal? What happened to the game between that date and the present? Is there any left today? What does the future hold for it?

A patient camera man with a naturalistic bent could have recorded in his passage from the sea to the Allegheny Divide, in precolonial days, an interesting and highly useful fauna. He could have filmed white swans in flocks so mighty that the waters where they congregated appeared as if dressed in white drapery. He would have observed without effort herds of bison, bands of elk in the springtime one hundred to the square mile, wild geese in profusion, wild turkey and grouse throughout the woodlands, white-tail deer as common as songbirds, while furbearers and vast quantities of smaller game were everywhere. It was no wonder that the Indians believed that game issued from great caverns in the earth and could not diminish.

If the camera man had lived a few decades later he could have filmed for us the other side of the picture, showing the buffaloes driven out before the hunter's advance; the wild fowl decimated by awful slaughter from many millions to fewer thousands; the passenger pigeon reduced from the myriads that blotted out the light of the sun to a few, and finally wiped out altogether. The facts with respect to the passenger pigeon are bald and afford unpleasant meditations for any one who looks upon wild life as something to be preserved from extinction rather than as helpless creatures to be wantonly destroyed.

And the same camera man, could he have lived so long and were to bring his camera into the Southern Appalachians today, would need to bring along with him his best stock of patience also, if he desired to film the species left in this region. If lucky, he might find an occasional wild goose; if persistent and even more fortunate, he might get a small bunch of wild turkeys; he would be able to catch the image of a gray squirrel here and there, but the fox squirrel he doubtless would not see; he could shoot a few white-tail deer with his camera, but he would be compelled by their scarcity to look for them only in favored spots, around game refuges and private preserves; he would find free roving elk only in those places where the states have planted them in recent years; he would find his camera and tripod heavy by the time he came upon such a shy playfellow as the cinnamon bear, and

only in the rougher parts of the mountains would it be found at all; otter and beaver would go unfilmed because of their conspicuous absence; he would see more deer in Pennsylvania than in all of the mountain sections of West Virginia, Virginia, Tennessee, North and South Carolina, and Georgia combined. But what a weary time and what long hours of extreme endeavor it would require to film the remnant of wild life remaining!

A BIG-GAME FENCE UNDER CONSTRUCTION ON THE PISGAH NATIONAL FOREST AND GAME PRESERVE

Even the present state of wild life in the Southern Appalachians is not secure. With the exception of oases here and there, where game protection has really won its way through some special effort, it is losing ground. Species are vanishing rapidly. The story runs the same from the northern parts of Alabama and Georgia to the southern edge of Pennsylvania. Game is not increasing, generally, within this whole territory. In fact, it is diminishing year by year. Some of the states within the region have laws that may be wise in wording and right in spirit, but the game has been reduced to a point beyond recovery, or has been driven out too long for such laws to be of much avail.

What of the future? There are a few areas, ample in size and holding certain species, that are able to stock surrounding sections, provided surrounding settlers are willing, open seasons are cut in half, bag limits are greatly reduced, many small refuges are established, and hound dogs are not bred faster than the game.

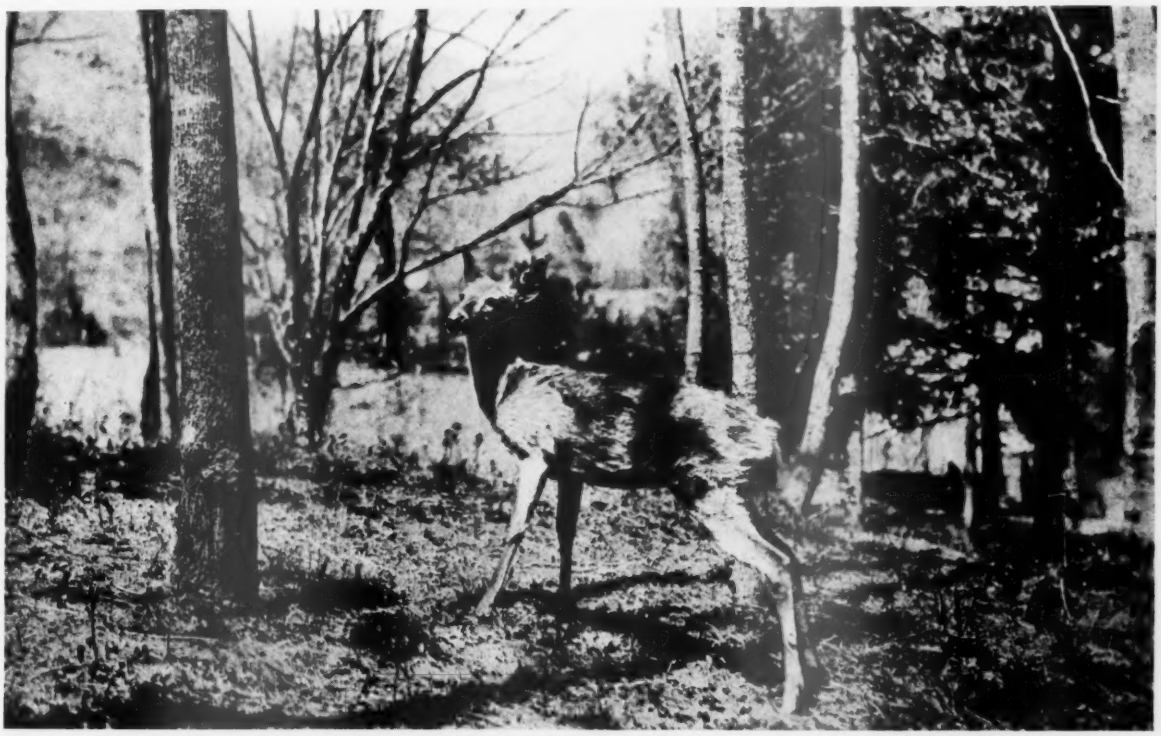
The brightest ray of hope in the whole dark situation, in so far as the states are concerned, shines out of Pennsylvania. That commonwealth is bringing back the game through a system of uniform protective laws, supplemented by small game refuges within larger areas that are thrown open to hunting at certain seasons. There are now about thirty-five such refuges in the state, none of them larger than 3,000 acres in extent. These are located with particular reference to the food and water supplies necessary to keep the game in good condition throughout the year. They are scattered over the state and many of them are located within the state forests. When Pennsylvania began to adopt this plan of protection the game had apparently lost all rights. But the plan was sound. Up to date it has worked out wonderfully well. The refuges are under the protection of a keeper on the ground, and are set apart from open areas by the simple expedient of a wire stretched around the exterior boundary. Due solely to sensible laws backed by the favorable sentiment of thoughtful citizens, game is increasing in

BISON ON THE PISGAH PRESERVE—NOT MUCH MORE THAN A REMINDER OF THOSE MIGHTY HERDS THAT ONCE ROAMED OUR PLAINS AND WERE DRIVEN OUT BY HUNTERS BEFORE THE ADVANCE OF CIVILIZATION

Pennsylvania, and all the while hunting is growing better.

Another area wherein game is on the increase is the Pisgah National Forest and Game Preserve, in the mountains of North Carolina. This preserve, formerly owned by George W. Vanderbilt, was stocked with deer, wild turkey, grouse, and wild boar. As a private refuge, it was successful in bringing back numbers of game animals into western North Carolina. Later, as a federal preserve, it has brought back, in the face of considerable handicaps, the Virginia deer to a total number that ultimately will call for some other action than mere preservation, in planning for the future. That the game in and around the preserve is increasing in spite of the handicaps referred to, is demonstrated by the number of

What should be done about the general situation? One big step would be taken if the Federal Government and the states embracing the Southern Appalachians would establish a large number of small refuges, suitably located, after the manner of those set aside by the State of Pennsylvania. The National Forests situated in this region could with ease become wonderful game harborages. This is also true of most of the mountain land, for the whole system is abundantly watered, and Nature has provided an open pantry sufficient to care for any normal increase in game. The National Forests should have within their boundaries at least ten refuges of one to three thousand acres, each scattered through every block of one hundred thousand acres. If states and Federal Government worked



A WITNESS THAT PLEADS WELL THE CAUSE OF WILD LIFE AS SOMETHING TO BE PRESERVED FROM EXTINCTION, RATHER THAN AS HELPLESS CREATURES TO BE WANTONLY DESTROYED. THIS IS A BIT OF TYPICAL SCENERY ON THE PISGAH GAME PRESERVE

different hunting clubs which have purchased or leased land all around the outside boundary in order to enjoy the sport of hunting the overflow therefrom. Each year since establishment, in 1916, the number killed on the outside increases, while the reverse is true within the preserve.

One detrimental feature lies in the many different local laws on the statute books of the various counties in which the preserve is located. Different open seasons, different closed seasons, different penalties for violations, different bag limits—all have a tendency to make these county laws farcical, and they are partly responsible for much confusion in the public mind. North Carolina is a great state and it can be justly proud of its progressive legislation, but it can take no pride in what it has omitted to do for its game.

together on such a plan, there would be in this region, within a few years, reservoirs of wild life as unfailing as the perennial springs that make the sources of the rivers flowing from the mountains to the sea. But the responsibility rests principally with the states, because the jurisdiction over the game rests with them, and only in special cases, as in the case of the Pisgah Game Preserve, has such jurisdiction been ceded by the states to the Federal Government.

Without stretching the imagination, we can by intelligent game management fill the Atlantic seaboard of two hundred years ago with as great a game population as that to be observed in Africa today, in so far as numbers of individuals are considered, though we cannot, perhaps, number as many distinct species.

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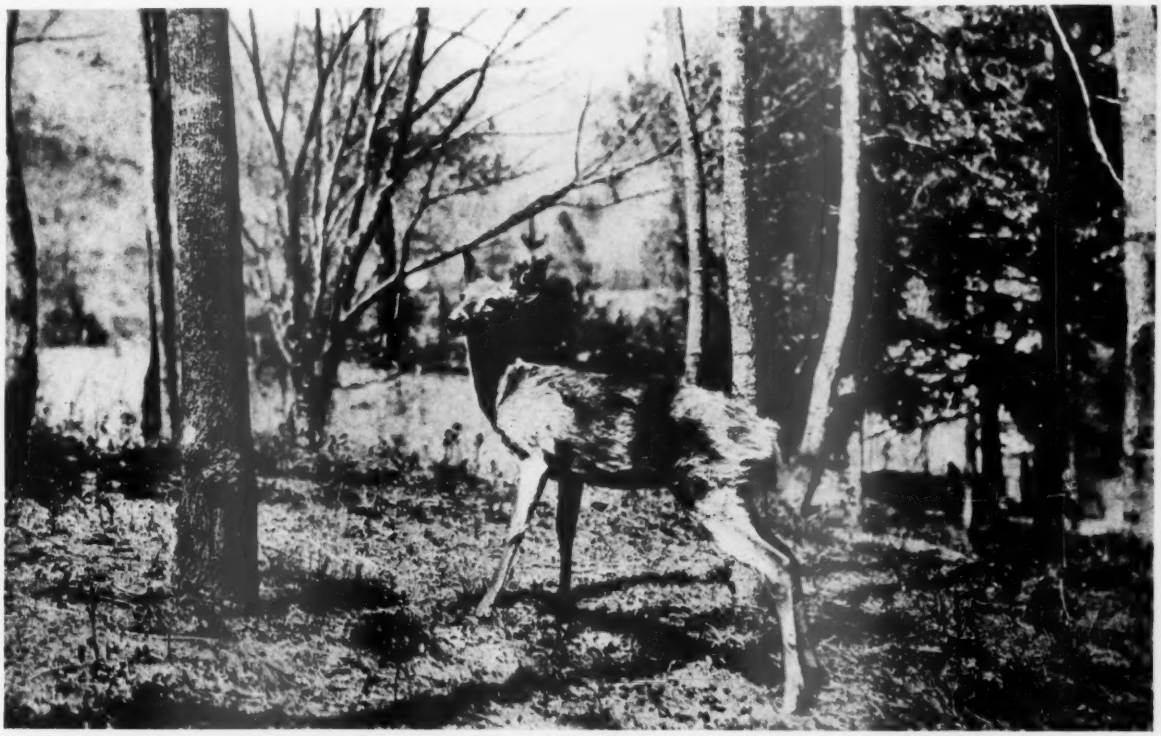
Another area wherein game is on the increase is the Pisgah National Forest and Game Preserve, in the mountains of North Carolina. This preserve, formerly owned by George W. Vanderbilt, was stocked with deer, wild turkey, grouse, and wild boar. As a private refuge, it was successful in bringing back numbers of game animals into western North Carolina. Later, as a federal preserve, it has brought back, in the face of considerable handicaps, the Virginia deer to a total number that ultimately will call for some other action than mere preservation, in planning for the future. That the game in and around the preserve is increasing in spite of the handicaps referred to, is demonstrated by the number of different hunting clubs which have purchased or leased land all around the outside boundary in order to enjoy the sport of hunting the overflow therefrom. Each year since establishment, in 1916, the number killed on the outside increases, while the reverse is true within the preserve.

One detrimental feature lies in the many different local laws on the statute books of the various counties in which the preserve is located. Different open seasons, different closed seasons, different penalties for violations, different bag limits—all have a tendency to make these county laws farcical, and they are partly responsible for much confusion in the public mind. North Carolina is a great state and it can be justly proud of its progressive legislation, but it can take no pride in what it has omitted to do for its game.

What should be done about the general situation? One big step would be taken if the Federal Government and the states embracing the Southern Appalachians would establish a large number of small refuges, suitably located, after the manner of those set aside by the State of Pennsylvania. The National Forests situated in this region could with ease become wonderful game harborages. This is also true of most of the mountain land, for the whole system is abundantly watered, and Nature has provided an open pantry sufficient to care for any normal increase in game. The National Forests should have within their boundaries at least ten refuges of one to three thousand acres, each scattered through every block of one hundred thousand acres. If states and Federal Government worked together on such a plan, there would be in this region, within a few years, reservoirs of wild life as unfailing as the perennial springs that make the sources of the rivers flowing from the mountains to the sea. But the responsibility rests principally with the states, because the jurisdiction over the game rests with them, and only in special cases, as in the case of the Pisgah Game Preserve, has such jurisdiction been ceded by the states to the Federal Government.

Without stretching the imagination, we can by intelligent game management fill the Atlantic seaboard of two hundred years ago with as great a game population as that to be observed in Africa today, in so far as numbers of individuals are considered, though we cannot, perhaps, number as many distinct species.



A WITNESS THAT PLEADS WELL THE CAUSE OF WILD LIFE AS SOMETHING TO BE PRESERVED FROM EXTINCTION, RATHER THAN AS HELPLESS CREATURES TO BE WANTONLY DESTROYED. THIS IS A BIT OF TYPICAL SCENERY ON THE PISGAH GAME PRESERVE

THE IMPOUNDING BASIN IS COMPLETELY SURROUNDED WITH NATURAL GROVES AND MORE THAN 500,000 PLANTED TREES

The Water Woods of York

By Joseph S. Illick

MOTORING over the York-Baltimore highway, thousands of people idle their engines near the quaint village of Jacobus to view and admire a planted forest of evergreens which clothes the rolling hills and stands in dense and orderly file down to the shores of an irregular body of water. Back of this striking young forest, resplendent with the freshness of youthful vigor, there is a story, and through it runs the vision and action of prudent men and the service of trees. It dates back not for a hundred years, as you may suspect, but scarcely more than a short decade, to the year 1912, which marked a summer of alarm in many a household in the historic old city of York. It was a summer of severe drought through these Pennsylvania hills. The streams around York, from which the fifty thousand good people of the city obtained their water, became alarmingly low, and the York Water Company was put to a supreme test to quench the summer thirst of the city. Aroused by this arduous experience, the board of directors of the company foresaw that what happens once may happen again. "Besides," they said, "York's growing. The city is demanding more water every year. We must be prepared to supply it."

How to increase the supply was by no means a simple problem. It was apparent that something had to be done and done promptly, because it was a case of building up through a course of years a large water supply. The directors lost no time, therefore, in calling in prominent engineers and having a survey made of all available sources of water supply. The survey developed that a section of farm land located along Codorus Creek offered the best topographic feature and the best water-supply possibilities. Plans were immediately formulated for the acquisition of this land. A number of properties, consisting chiefly of fertile farm land and aggregating 570 acres, were acquired.

Immediately after the construction of the large impounding dam, which would impound 900,000,000 gallons of water, it became necessary to give consideration to the treatment of the soil cover on the land that surrounded it. Most of the land bordering and draining into the impounding basin had been used for agricultural purposes. Some experts suggested that a grass covering would protect the land from erosion. After conferring with several of the best soil and forest experts of the country, it was decided that an unprotected and dense cover of grass might prevent erosion; but it would not afford so complete a protection to the watershed as an unbroken cover of evergreen trees, nor would the grass be so effective as a natural filter bed for the rain water that would fall on the watershed.

On the basis of the recommendation made by these experts, it was decided to begin reforestation work at once. The first year (1913) after the completion of the 900,000,000-gallon impounding basin 50,000 white pine and 5,000 Norway spruce transplants were planted. Since then a considerable number of trees have been planted each year. The total number of trees planted to date is 506,800, of which 57 per cent are red pine and 30 per cent are white pine. The remainder includes European larch, Norway spruce, and Douglas fir, with a sprinkling of hemlock and silver fir.

During the first few years of planting, white pine was the principal tree set out, but when the white pine blister rust appeared in other parts of Pennsylvania it was decided to refrain from planting this tree until definite information was at hand as to what damage the disease would do. During the first four years of planting work, 145,300 white pine trees were set out.

The planting experiences of the York Water Company now extend over more than a decade and are among the

most instructive and successful in Pennsylvania. A conservative estimate shows that more than 90 per cent of the planted trees are still living, and most of them are in a thrifty condition and making remarkable growth. In only a few instances was it necessary to replace missing trees and in only one case did fire do any damage. The York Water Company is committed to the planting of large and stocky trees. In only a few instances were small seedlings set out. Stocky transplants were the prevailing type of planting stock. The unusual success of the planting work indicates that the setting out of this kind of planting stock is recommendable, particularly on grassy and exposed planting sites. In order that the best kind of planting stock may be available, a small nursery is maintained, in which small trees are planted and kept until they are just right to set out on the final planting site.

In order that the valuable experiences and practical results of these plantations could be made available to other persons interested in tree-planting, the Pennsylvania Department of Forests and Waters undertook a special study of this unusual forest-tree planting project. It found that during nine growing seasons the red pines reached an average height of from 8 to 12 feet, individual trees exceeding 13 feet in height.

It is interesting to note that when the plantation was four years old the trees grew only one-half of a foot in a year, when seven years old the annual height growth develop into dense stands of valuable timber. They show what red pine will do on a wide range of sites and indicate how successfully this tree may be grown if planted carefully and handled properly.

Most of the 150,000 white pines have been set out on the moist sites, at lower elevations, about the border of the impounding dam. In one of the thrifty white-pine plantations, established in 1914, there were only a few trees in the entire plot less than 8 feet high. Of the 369 trees, 117 are over 12 feet high, with an average of 13.6 feet, and 252 are from 8 to 12 feet high, with an average height of 10.6 feet. The largest white pine found in the plot, planted only eight years ago, was 16 feet high and has a diameter of 3.8 inches. During one growing season this thrifty tree grew more than three feet in height, and the average annual height growth during the first eight years was almost two feet.

In 1914, 35,500 European larch were planted. They grew well and were full of promise, but unfortunately a fire destroyed a large number of them. Of those that remain, 100 specimens were measured, and their average height is now 15.4 feet and their average diameter is 2.8 inches. The largest tree measured 21 feet in height and is 4.4 inches in diameter, the result of only nine years' growth.

The European larch is a native of central and northern Europe. While it is a foreigner in Pennsylvania, its

A WELL-KEPT DRIVEWAY AND CLEAN SUBDIVISION LINES PASS THROUGH THE WONDERFUL PLANTATIONS OF WHITE PINE AND RED PINE

was one and one-half feet, and at nine years the trees grew 2.1 feet in a season. The rate of growth will continue to increase, and in a few years the soil will be completely covered with a dense and unbroken tree canopy, and a deep cover of leaf mulch will soon be formed on the ground, which will act as a natural filter bed and be of great value in regulating the water run-off.

All of the 289,000 red pine trees are in a vigorous condition. They carry no signs of disease and promise to

growth in forest plantations is equal to that of other planted trees and in many places has exceeded other trees in height growth. The writer believes that the white pine and red pine are far superior to the European larch for watershed reforestation, because of their greater shade endurance, which results in a denser crown canopy, and also because of their greater production of leaf litter, which forms a deeper and very absorbing covering over the soil.

As a result of this tree-planting, erosion and the deposition of silt and other undesirable material in the stream beds and impounding basin have been completely stopped on all the reforested areas. Reforestation of watersheds is of the utmost importance to all water-users. Every particle of soil brought down by the water and deposited in the reservoirs reduces its capacity, interferes with the operation of the water-supply machinery, and may even impair public health. Tree-planting not only reduces the surface run-off of water, but it also helps regulate the water-flow. The water, instead of rushing away in uncontrollable torrents during periods of heavy rainfall, is absorbed in the forest cover and filtered off gradually into the mineral soil, from which it is given out in regular flowing streams and springs.

THIS IS TYPICAL OF THE RED-PINE PLANTATIONS OF THE YORK WATER COMPANY, WHICH ARE AMONG THE BEST IN AMERICA

After more than a decade of forest-tree planting experiences, Mr. Edgar P. Kable, superintendent of the York Water Company, states that "by reason of the reforestation work already done, it has been estimated that the dry water run-off of the branch of the Codorus Creek upon which the impounding dam is located has increased approximately 50 per cent, which has undoubtedly tided over the present (1922) water shortage, whereas without this development there might have been considerable suffering and undoubtedly a restricted use of the public water supply."

The forest-tree planting work of the York Water Company was originally regarded by some people as an extravagant undertaking. Now one hears only praise for those who worked so well and accomplished so much. This planting project is truly a big piece of constructive work and will ever stand as a credit to the men who promoted it.

Association's New Forester

SHIRLEY W. ALLEN, of California, was appointed last month as Forester for the American Forestry Association, and assumed the duties of the office on April 21. Mr. Allen is a forester of broad experience, having worked both in the eastern and western parts of the United States, and the Association feels fortunate in having secured his services.

For more than a year the Directors have been endeavoring to make arrangements for the employment of a man who could give his whole time to the work contemplated by the position of Forester. This work was temporarily interrupted when Mr. Butler, the former Forester, was made Secretary of the Association. There is a great field of opportunity open to the Forester of the Association, and activities in all lines will be strengthened by this addition to the organization.

Mr. Allen received his forestry training at Iowa State College, and during his early years worked for lumber companies in northern Minnesota. In July, 1909, he joined the United States Forest Service and for three years worked in various capacities on the National Forests of California. Resigning the Deputy Supervisorship of the Lassen National Forest in 1912, Mr. Allen began four years' work as Extension Professor of Forestry at the New York State College of Forestry. Much of Mr. Allen's time was spent, during these years, in touring the State of New York, lecturing on forestry and giving demonstrations in farm and estate forestry.

In 1918 Mr. Allen joined the staff of the Forest Products Laboratory as Industrial Examiner, and in 1919 he became Deputy Supervisor of Klamath National Forest. Six months later he was transferred to the Angeles National Forest as Supervisor, and thus became responsible for one of the most intensively used National Forests in the West. Two years later Mr. Allen left the Forest Service and organized the Shirley Allen Lumber Company. He later sold his interest in this concern and during the past year has been engaged in Association work in California.

How Did the Little White Birches Know?

© *Wallace Nutting, Inc.*

How did the little white birches know
That Spring was on her way?
But yestere'en the old North Wind did throw,
Pirouetting off on a single toe,
A thousand pillows of feathered snow,
A-snapping his ice wings to and fro.
How did the little white birches know
That Spring would win the day?

Little white birches stood slim and white
All through the winter's blow;
Bravely bedight
Against his might;

A thousand fingers upheld to view,
Slender brown fingers against the blue.
From queer black patches set here and there—
Coquettish patches black as night—
Satin-white skins more shimmering fair!

Little white birches in silver sheen,
How did you dare
To suddenly wear
That palest, mistiest, filmy green?

—*Charlotte Thurston.*

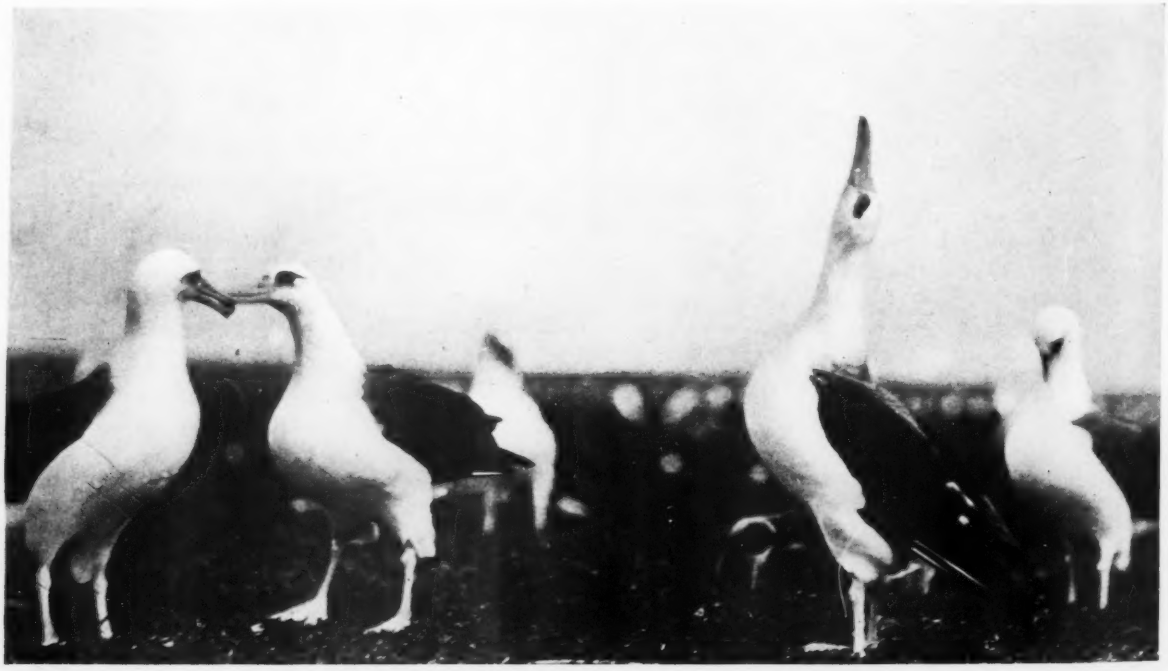
OLD DADDY ALBATROSS
"STEPS OUT"

The World Champion Dancing Bird

By P. M. Fogg

IN THESE days of super-jazz and ultra-modern toe dancing, the average person is no longer greatly surprised at any new development of the art; yet even the concerned moralists have probably never thought to see such crazes spread to the lower orders of animal life. How true, even though trite, however, that the unexpected frequently occurs where and when least anticipated.

Imagine, for instance, these fads having been enthusiastically adopted by wild fowl on a desolate little island in the Pacific Ocean thousands of miles from our western coast! Remarkable as it may appear, no less a member



U. S. Biological Survey

"ON WITH THE DANCE, LET JOY BE UNCONFINED"—NOT "ON THE BEACH AT WAI-KI-KI," BUT THE LAYSAN ALBATROSS EXECUTING FANCY STEPS ON THE HAWAIIAN BIRD RESERVATION

of the feathered kingdom than the dignified albatross has thus succumbed to the spirit of the times, and, considering the handicaps under which he has labored, his degree of proficiency as a dancer is extraordinary indeed.

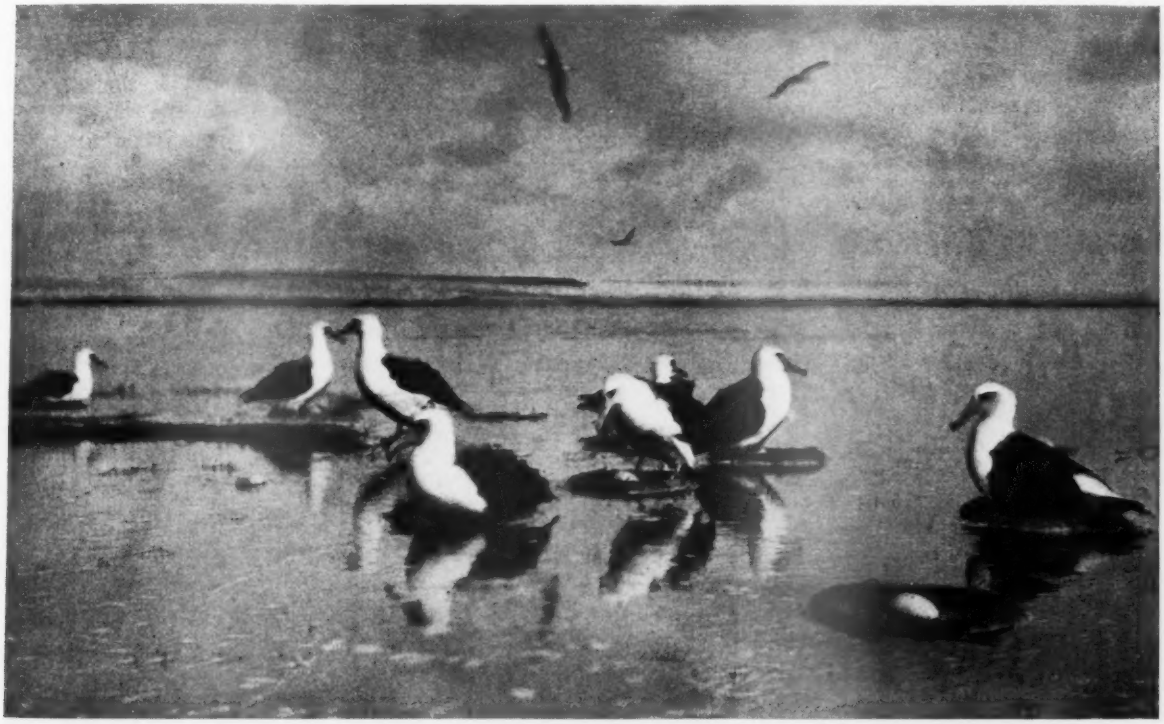
Let it be remembered that this distinguished bird is the largest flyer that roams the seas. In the region of Cape Horn he measures, tip to tip of outspread wings, from ten to twelve feet. Even the American eagle, that mighty monarch of land fowls, probably scratches his bald head and privately admits, with reluctance, that this husky friend is worthy of his admiration.

Then, too, the albatross lays claim to distinction for other important reasons. For one thing, he roosts upon a permanent perch, beside Poe's immortal raven, in the hall of literary fame. Coleridge was responsible for this. His "Rime of the Ancient Mariner" awarded a medal of honor the luster of which can never be dimmed. It was all due to that old superstition of the seaman, that a "gony," as the sailor calls him, brings favorable winds to the ship which he chances to follow.

Aside from this reputation, these web-footed fishermen are probably unequaled in their unusual powers of flight and endurance. Wandering albatrosses are frequently seen a thousand miles from land. Indifferent both to the calm of the gentle swell and to the wildest of storms and gales, they are indeed at home upon the face of the deep. Only at mating time do they flock by thousands to remote islands of the sea, there to live while the young are hatched and raised.

It is during such leisurely months that albatrosses permit themselves to indulge in dancing. In fact, they apparently enjoy nothing better than this manner of whiling away the hours in healthful exercise. Each dancer furnishes his or her own accompaniment, and seemingly they are almost tireless devotees of the pastime. Shall we watch them perform?

Let us imagine ourselves, then, standing on the low, shelving surface of that tiny spot in the Pacific Ocean known as Laysan Island—eight hundred and fifty miles northwest of Honolulu—a mere dot of land, only two square miles in area. There are only two trees—lone cocoanut palms. The fierce heat of the summer sun beats mercilessly upon the glaring coral sands and the low, scrubby vegetation—a barren, desolate, uninhabited place. Even a movie director could ask nothing better as a location for landing the raft of his castaway hero and heroine.

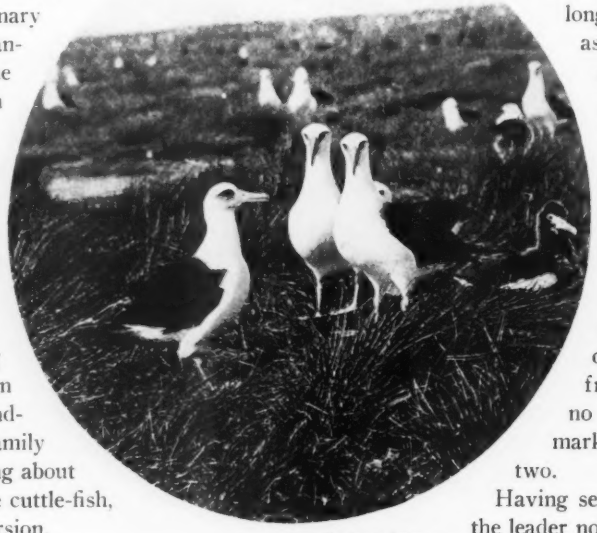


Courtesy of "Natural History"

THE NATURAL NESTING PLACE OF THESE INTERESTING BIRDS IS ON THE LAND, AND THESE APPARENTLY AQUATIC NESTS ARE EXPLAINED BY THE FACT THAT A DEPRESSION IN THE CENTER OF THE ISLAND HAS BEEN FLOODED WITH WATER, THE ALBATROSS INDUSTRIOUSLY BUILDING UP THE EARTH ABOUT ITS SINGLE EGG FOR PROTECTION

On second thought, perhaps the word "uninhabited" is not altogether an appropriate one; for a group of scientists, upon visiting the island a few years ago, estimated the number of birds and found more than a million living there. Large and small, they fairly crowd and jostle each other, residing not only in basement burrows, but likewise on the ground, and also in several tiers among the bushes, somewhat after the arrangement of city apartments.

One of the twenty-three varieties of these feathered folk is the Laysan albatross. Measuring but seven and one-half feet in wing-spread, he does not compete in size with his Cape Horn cousin. Even so, he is easily the giant of the island. The rookery comprises a definite section of territory, and here he and his family live during ten months in each year. It is here, too, that he has acquired such extraordinary skill in tripping the "light fantastic." Whether or not the far-away relatives in southern seas have developed similar talent is not known; perhaps they have; or it may be that this particular variety is the only member of the albatross family which has learned to relieve monotony in such fashion. At all events, on any day during his long sojourn ashore, when a Laysan albatross becomes tired of standing about, dwelling upon his family troubles, or perhaps of thinking about the scarcity of good, palatable cuttle-fish, he turns to the dance for diversion.



U. S. Biological Survey

"PARDON ME, MISS ALBATROSS, BUT MAY I HAVE THE PLEASURE OF THE NEXT FOX-TROT?"

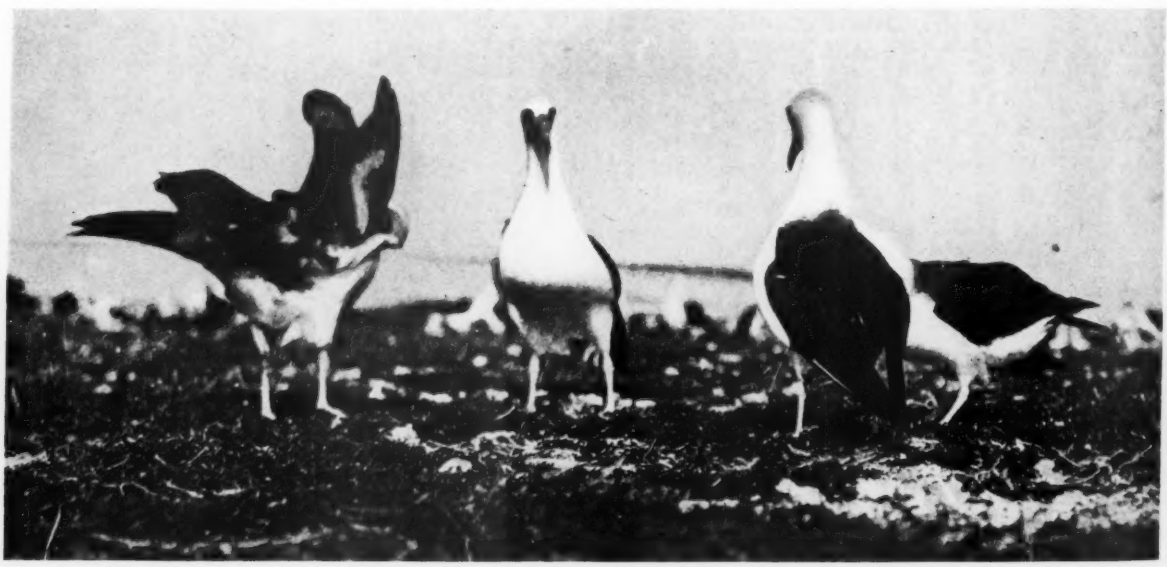
Of course, he requires a partner. There would be no fun in waddling about over the hot sands all by himself. So he steps up cheerfully to another of his kind, makes a sweeping bow, and in an odd squeak, not intended for mere man to understand, he requests the pleasure of the next fox-trot.

The bird thus honored usually accepts the offer with a low return bow. Then, nodding and circling about each other, they limber up for the heavy work. These little preliminaries having been completed, they cross bills quite rapidly several times, very much as two fencers wield their foils.

Now they are ready to begin the dance. The leader turns his head to one side and, with one wing raised, dips his long bill down against his breast, as though to search for a cigar in an upper vest pocket. The partner, standing near, watches this action closely or looks from side to side in a mechanical way, meantime singing in a loud and rather harsh voice. An idea of the character of the melody may be obtained by recalling the tune used by old Dobbin when he neighs from his stall at noon with no oats in sight. There is a marked similarity between the two.

Having searched in vain for the cigar, the leader now proceeds to prance around the other bird, to the accompaniment of the latter's resonant notes. His webbed feet are raised high at each step, and the march is proudly performed with spirit, yet with a due regard for dignity. The negro cake-walkers of fifteen or twenty years ago used a similar step; perhaps you may recall it.

When this movement has been rendered to their satis-



Photograph by Bailey, courtesy of Colorado Museum of Natural History

THE HEAVY WORK BEGINS. THE LEADER TURNS HIS HEAD TO ONE SIDE AND, WITH WING RAISED, DIPS HIS LONG BILL DOWN AGAINST HIS BREAST, AS THOUGH TO SEARCH FOR A CIGAR IN AN UPPER VEST POCKET, WHILE HIS PARTNERS, STANDING NEAR, WATCH HIS ACTION CLOSELY AND SING IN A LOUD, HARSH VOICE

faction, the dancers then stand close together, facing each other. The leader bows, after which either one or both point their beaks straight up in the air, rise nimbly upon their toes, and, with breasts puffed out and lungs inflated, utter a long-drawn nasal groan, like the word "ah-h-h-h-h," ending with a rising inflection. This is the final figure of the dance.

However, there is still the encore, and after that many more such dances are to follow, for the entertainment has only just begun, and the fun will continue for hours. Numerous variations may be introduced, to prevent unnecessary repetition, but the above-described routine is characteristic of the style and reveals the motif. The leader may retain his rôle for several rounds, or he may share honors with the partner. In either case the amusement is never spoiled by ill-feeling and both participants always enjoy themselves hugely.

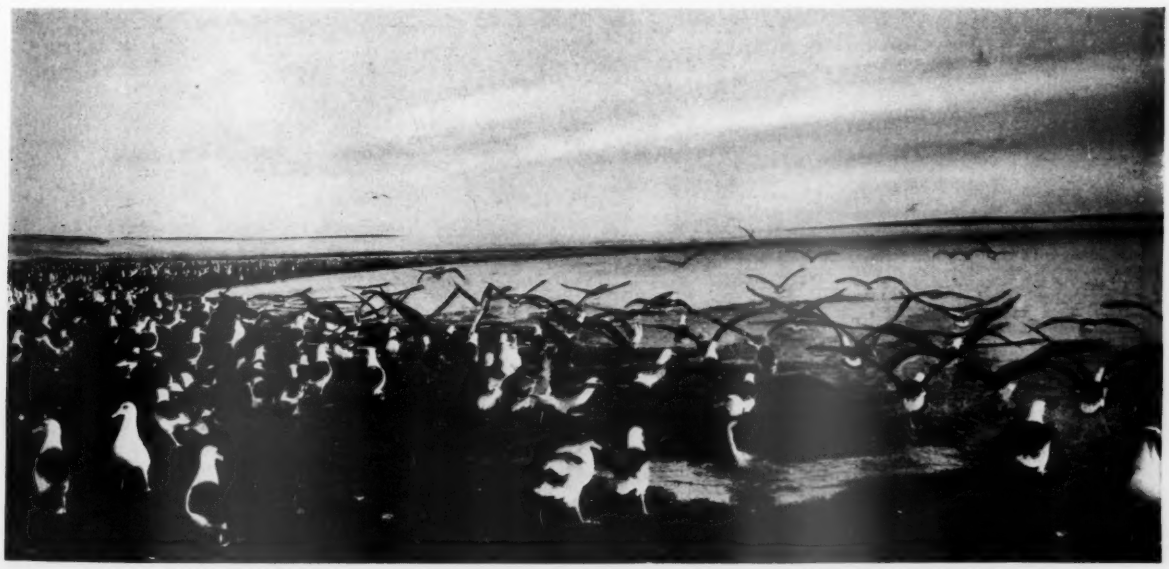
One variation, occasionally employed, is especially noteworthy. The first bird will jauntily pick up a twig or a bit of dried grass in his bill and present it to the other with his compliments. The gift is invariably refused. But, not to be outdone, the partner will scuffle about, find a similar present, and at once offer it in return. This, too, fails of acceptance, after which both toss aside their twigs and resume the labored steps of the dance with all their might.

While the ball is in progress, twenty or more pairs of these flappers may be seen in one locality, having the time of their lives and filling the air with strange, hoarse cries. Meantime others, unoccupied, stand idly by, looking on and, like wall flowers, longing for a chance to take a part. Actuated by a sense of pity or some equally good bird reason, a sociable couple occasionally invites one of these spectators to join in and show his skill. In such a group of three the leader divides his attention between the other two; but the plan is not a very satisfactory one, as more or less confusion is apt to result. Perhaps the voices do not blend well; at any rate, it is evident that the pastime is more harmoniously rhythmical with only two participants.

On a clear night, when the moon sheds its soft radiance over the island and energetic couples are busily bobbing white heads up and down among the dark clumps of brush, the sight is novel and peculiarly impressive. On all sides, near and far, the dancers are hard at it, their squeaky groans and prolonged ah-h-h-h-h's rising above the shrill cries of their young and rivalling the weird shrieks of the other night birds.

Photograph by Bailey

THE DUSKY COUSIN OF THE LAYSAN BIRD, KNOWN AS THE BLACK-FOOTED ALBATROSS; HE IS A MUCH MORE GRACEFUL AND DELIBERATE DANCER



Photograph by Bailey, courtesy of "Natural History"

BETWEEN NUMBERS, THE DANCERS COOL OFF, AND THEN RESUME THE LABORED STEPS OF THE DANCE WITH ALL THEIR MIGHT. THERE CAN BE NO DOUBT THAT THE ALBATROSS IS ENTITLED TO THE BLUE RIBBON AS THE CHAMPION EXPONENT OF THE MODERN DANCE IN THE BIRD WORLD

By far the largest number of albatrosses at Laysan bear white plumage, except for the wings, which are black. However, there is a colony of dusky cousins, living on the opposite shore of the island, known as the black-footed

Courtesy of "Natural History"

THE DIGNIFIED MAMMA ALBATROSS LOOKS ON WHILE *PATER FAMILIAS* TRIPS THE LIGHT FANTASTIC

variety. In some respects the latter show superior skill as dancers. More graceful in movement, less prone to hurry through the figures, the blackfoot not only enjoys his amusement, but insists upon taking his own time about it; and, too, his dance is more elaborate. Raising both wings instead of but one, he sings more softly, the tune ending with a note like the muffled stroke of a bell under water.

Not infrequently he calls in a social way upon his relatives, and while there a little impromptu dance is likely to be proposed. The guest is, of course, invited to take part; but somehow, although striving to perform in his very best style, he doesn't seem to "fit," being too slow and poky. The host adheres to the usual tempo; so the caller, with his more leisurely swing, is presently out of step. Soon they are both so sadly mixed that the effort is discontinued. Thus, the introduction of such combinations into the dances seldom succeeds.

The albatross has not only developed peculiar aptitude as a dancer, but deserves credit for the observance of a polite social custom in a manner truly commendable. This is especially striking to one who visits the island as a complete stranger. All varieties of the birds are friendly; scarcely any will fly or run at the approach of man. In fact, some will even crowd about with ill-mannered curiosity. But it remains for the albatrosses to exhibit an understanding of refined etiquette, and to extend that type of courtesy to a guest, which is always delightful. At first thought, it may seem ridiculous for a man to bow, upon entering a group of these Laysan citizens for the first time; yet that is the proper procedure, for at such a meeting the albatrosses will suavely acknowledge it by bowing in return. What a gracious welcome from the chief residents of the colony!

It would hardly be fair to the feathered world to claim for the albatross sole honors as a dancing bird, for in many countries are found other types having distinct skill in the art. The ostrich waltzes dizzily, and the peacock, the pheasant, the plover, and many more have special steps of their own devising, which they more particularly display at mating time. Nevertheless, there can be no doubt that the albatross is entitled to the blue ribbon as the champion of them all in Terpsichorean ability—the most polite and the cleverest dancing bird in the world.

CHIEF Forest Ranger Norman Core, of the Florida Parish, recently in an argument in favor of forestry wound up his speech with the following expression:

"I don't believe a mean-hearted person can work with Nature and make a success of it; he will have to get a clean heart or get out of the Forestry Game."

"The only clue I could get to the origin of the fire was a wooden bucket that had evidently been used for holding bee bait."—*(Report of Forest Guard to his District Ranger.)*

THE BEE-HUNTER

Busy little bee a buzzin' all th' day;
Ranger on a hilltop a lookin' every way.
Bucket of bait a-hangin' on a limb;
Long-legged bee-hunter by th' name o' Jim.
A fire in th' brush so Jim kin see
Out o' th' thicket an' watch thet bee.

Ranger comes a humpin' on an old white hoss;
Jim says th' bucket ain't so much of a loss.
Th' fire got away an' spread all around.
Jim made tracks; he jist tore up th' ground.
Th' fire cost slathers of Uncle Sam's cash,
An' Jim had no honey to sweeten his mash.

But a name on th' bucket caused a whole lot o' trouble,
An' th' bee-hunter's alibi was bust like a bubble.
Jim had no money, so he went to th' "coop,"
Where they fed him on tea and mighty thin soup.
Th' bee's still a buzzin' from morn 'til night,
An' th' Ranger's still lookin' from th' same old site.

—Charles V. Brereton.

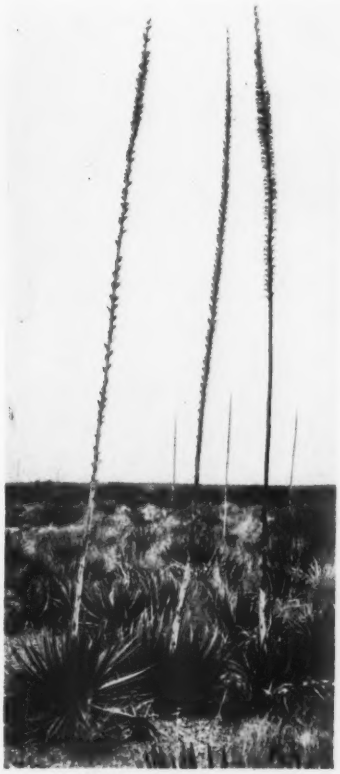
The Arizona Cypress and Weeping Juniper

Two Notable Trees of the Chisos Mountains of West Texas

By George B. Sudworth

ORDINARILY those who travel by rail through Texas are likely to think of it mainly as a great plains region, particularly the central and western parts. Except by those who have penetrated the Great Bend and other mountain sections of southwestern Texas and the territory to the north, few who travel the state by rail routes suspect the existence of wonderful tree-bearing mountains that lie hidden away in these remote sections. Among the interesting mountains to be mentioned here are the Chisos, Chinati, and Davis Mountains. They are rugged systems, particularly the first two, well known locally to settlers of the region, who visit them during the big-game season from points one hundred or more miles away. These mountains are fairly well watered and have an abundance of grasses and other wild forage, together with many different sorts of forest trees, such as oaks, Western yellow pine, piñon pine, Douglas fir, one-seed juniper, alligator juniper, etc. But the dry stretches of rolling desert plains and hills to be traversed in reaching the mountains are very sparsely watered and there is only a small supply of herbage on which saddle and pack animals can subsist. In general, it is a region of lecheguilla, century plant, sotol, opuntias, Spanish bayonet, mesquite, acacias, allthorn, ocotillo, creosote bush, and other woody plants that seem able to thrive under these inhospitable conditions. On two occasions when journeying to the Chisos Mountains the writer recalls that, except for a small supply of canteen water, "dry camps" had to be made, and, regrettable though it was, the faithful little mules had no water for twenty-four hours. It always seems preferable for man to suffer thirst than to deprive toiling dumb brutes of water and food. But necessity is a stern master.

SOTOL
(*Dasylirion texanum*)



LECHEGUILLA
(*Agave lecheguilla*)

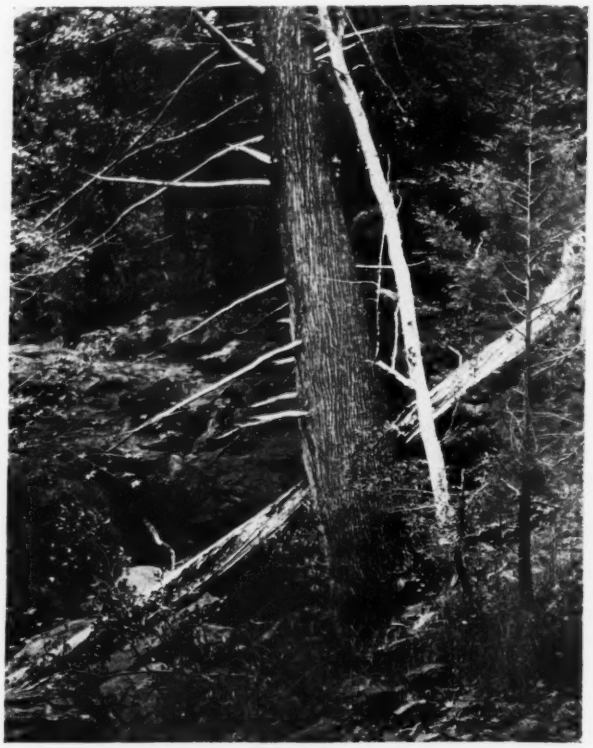
THE CENTURY PLANT

The Cypress Tree of Chisos Mountains

Altogether, there are seven different species of cypress trees (of the genus *Cupressus*) native within our borders. Five of these are confined to the Pacific Slope country, and almost entirely to California; but two of these trees, the so-called Arizona cypress (*Cupressus arizonica*) and the smooth cypress (*Cupressus glabra*) occur in the southern Rocky Mountain region. The Arizona cypress has been known to science forty-two years. In all these years it has been

found only in a few mountain localities in southwestern New Mexico and in central and southeastern Arizona. Apparently, it has not been known to foresters, nor to botanists, that the Arizona cypress occurs rather abundantly in the Chisos Mountains.

So far as the writer now knows, Mr. Vernon Bailey, of the Biological Survey, was the first to note its occurrence there, nearly twenty years ago. A record of this find was published in 1905, in "North American Fauna," which deals with the fauna of that region. Strangely enough, this record seems to have escaped the notice of dendrologists, for none of the books on North American trees published within the last twenty years records the existence of the Arizona cypress within the Chisos Mountains. The existence of the tree there has remained practically unknown to students of trees until the present time. The writer found this cypress in November, 1923, quite by accident, while crossing a high divide of the Chisos Mountains and descending into a central rough canyon. It was impossible on this occasion to determine the full extent of its distribution in these mountains, but the tree was observed to be growing for several miles along the sides and on adjacent benches of this rough rocky canyon, which lies at the head of what is locally known as "Blue Creek." The general elevation where the tree occurs is approximately from 6,000 to 6,500 feet. The tree has a straight conical-shaped trunk and attains a height of from 50 to 70 feet and a diameter of from 18 to 24 inches. The externally weathered, longitudinally furrowed bark of old trunks is grayish, but when broken the inner layers are a dull red-purple, as is also the thin, smooth, scaly bark of the branches. Piñon pine, Chisos oak, large-tooth maple (*Acer grandidentatum*), and the brilliant red-berried Texas madroña (*Arbutus texana*) are some of its associates. Fortunately, probably the rough nature of the canyons where this cypress grows, in the Chisos Mountains, has saved the tree from timber thieves, for no signs of cutting were seen. The sapwood of Arizona cypress is of a pale straw-color and the heartwood is yellowish brown, of light weight, narrow-ringed, straight-grained, and splits easily. Dry, freshly cut wood has a cedar-like odor.



ARIZONA CYPRESS
(*Cupressus arizonica*)

WEEPING JUNIPER
(*Juniperus flaccida*)

The Rarest Tree in Chisos Mountains

The weeping juniper (*Juniperus flaccida*) is not only the rarest and least-known tree in the Chisos Mountains, but probably also in the United States. It is found nowhere else in the United States. Few people know of this unique and beautiful juniper, and fewer still, even among students of trees, have seen it grow-

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The Leper's Tree

On the Small Island of Oahu, in the Pacific Ocean, the Hawaiian Government Is Growing Chaulmoogra Trees as a Source of Oil Valuable in the Treatment of Leprosy

By C. S. Judd

Superintendent of Forestry, Hawaii

IT IS a long reach from Hawaii to Siam and to the winding Chindwin River and the Martaban Hills of Burma, but it was necessary to bridge this gap before the project of growing chaulmoogra trees for the production of oil could be started on a small island out in the Pacific Ocean, where by the scientific use of this promising drug a winning fight is being waged in the relief of those afflicted with leprosy.

The man who made this project possible was Mr. J. F. Rock. During a series of explorations for plant material, begun in 1920, Mr. Rock secured and forwarded to Hawaii seeds of the various chaulmoogra trees, the *Hydnocarpus anthelmintica,* from Bangkok, in Siam; the Kalaw (*Taraktogenos Kurzii*), from near Mawlaik, in the upper Chindwin District of Burma, and the *Hydnocarpus castanea,* from the Martaban Hills, in lower Burma.

The seeds, packed in charcoal for the long journey, arrived in good condition, and were carefully raised in germinating flats, and then transplanted into individual pots and held for a year, when they were ready to be set out. The work of planting was done by the Board of Agriculture and Forestry with the co-operation of the Hawaiian Sugar Planters' Association.

On the advice of Mr. Rock, the well-drained foothills in the Waiahole Forest Reserve, on the windward side of the island of Oahu, over the mountain range from Honolulu, were selected as the site for the plantation of these trees, which in about eight years, it is hoped, will begin to bear the round fruit packed with seeds from which this much-desired oil is obtained.

The properties of chaulmoogra oil for the treatment of leprosy have been recognized from early Asiatic his-

GENERAL VIEW OF THE CHAULMOOGRA PLANTATION, WAIAHOLE, OAHU, HAWAII. THE BUSHIER TREES ARE KOA TREES, PLANTED TO PROTECT THE CHAULMOOGRA

tory, and particularly in India it has been used as a palliative. Taken by way of the mouth, its administration was frequently attended by amelioration of the disease, although this was nauseating and offensive to the stomach, and at best the action was slow. More became known about chaulmoogra oil in 1904, when Dr. F. B. Power determined the true origin and nature of the oil and succeeded in separating the physiologically active acids in the oil.

In Hawaii, where the injection of chaulmoogra oil was tried at the Kalihi Leprosy Hospital by officers of the U. S. Public Health Service, the results led them to believe that a greater therapeutic value could be obtained from the oil if the active agent or agents were isolated and the liquids made more suitable for intra-muscular or intravenous injections.

It was Dr. Arthur L. Dean, expert chemist, and now President of the University of Hawaii, who in 1918 stepped into the breach and answered the appeal to chemistry for the isolation of the most valuable curative agent or active principle in chaulmoogra oil. Months of intense study and enthusiastic experiment with special and costly apparatus resulted in the working out by fractional distillation, under high vacuum, of the "Dean derivatives," the separation of chaulmoogra oil into four fatty acid fractions, and then, on account of their insolubility, converting them into their ethyl esters, thus obtaining thinly fluid oils readily absorbable upon intramuscular injection.

TWO FINE YOUNG SPECIMENS OF GROWTH. THE CHAULMOOGRA, THOUGH ONLY ONE YEAR PLANTED, HAS ATTAINED A HEIGHT OF FOUR FEET EIGHT INCHES

By a happy combination with the Territorial Board of Health and the U. S. Public Health Service, an excellent opportunity was afforded for the use of these derivatives in the Kalihi Hospital, near Honolulu, where the patients were under constant observation and control. Cases which improve to the point where the clinical signs have disappeared and the bacillus can no longer be demonstrated are recommended for parole. There is no way of demonstrating that any person has been absolutely cured of leprosy, but the patients who are paroled are believed to be free from the disease. In the great majority of cases which became bacteriologically negative there has been no reappearance of the disease. During a period of fourteen months ended March 15, 1921, 50 per cent of the leprosy patients at the Kalihi Hospital have recovered as a result of this specialized treatment and have been paroled. During the past five years over 260 patients have been discharged as cured. Only forty-five of these have returned on account of a recurrence of the disease.

The oil now used for these derivatives is obtained from India, where it is pressed cold and is imported at great expense. It is hoped that within ten years Hawaii will be supplying its own oil for the cure of this disease, from which the sting of dread and fear has been removed by the application of modern science.

In starting the chaulmoogra plantation, the ground, where feasible, was first prepared by plowing and harrowing, and the wisdom of this treatment has been proven; for on such areas the chaulmoogra trees have made far better growth than where they were merely set out in holes dug in the guava and lantana brush. The first plantings were made in December, 1921, with 880 *Hydnocarpus anthelmintica,* and have been added to until a total of 2,390 trees of this species are now included in the plantation. The balance is composed of 850 *Taraktogenos Kurzii* and 80 *Hydnocarpus castanea.* In addition to these, 383 trees of the false chaulmoogra (*Gynocardia odorata*), which yields an oil different from chaulmoogra oil both in its physical characters and in its chemical composition, were planted on neighboring areas. The usual spacing adopted for the trees was 20 by 20 feet apart, but on some of the slopes a spacing as close as 15 feet was used.

The chaulmoogra trees have found their new home congenial and have taken kindly to the red volcanic Hawaiian soil. They have suffered somewhat, however, from the effects of the strong trade winds, which have tended to blast their leaves. To offset this, the native koa tree (*Acacia koa*), of ukulele fame, has been interplanted in the exposed sections of the plantation, and will be retained until they begin to crowd the chaulmoogra, when they will be thinned out.

The koa, which in Hawaii comes second in importance of the native trees after the ohia lehua, belongs to the bean family. Its flat brown pods contain hard shiny seeds, about the size of an apple seed, which may lie dormant for years in the ground and then germinate and grow into trees. The first leaves on a koa seedling are compound, but these soon change into flattened leaf stalks or phyllodes, which are sickle-shaped and perform all the functions of a leaf.

THIS CHAULMOOGRA, THE HOPE OF THE LEPERS, IS PLANTED AT THE GOVERNMENT NURSERY AT HONOLULU; IT IS ONLY TWO YEARS OLD, BUT THIRTEEN FEET HIGH

In youth the koa is a rapid grower, and since it grows best on well-drained soil, it was selected to form the protective wind-break for the trees in this chaulmoogra plantation. Being a legume, it also has the propensity of improving the soil by fixing the free nitrogen of the air and adding it to the soil.

The mature koa is one of the most stately of Hawaiian forest trees. When grown in the open, it develops a symmetrical spreading crown with a short, thick trunk which often reaches a diameter of ten feet at the ground. When grown closely in the wet forests, on good soil, the koa will attain a height of one hundred feet, with a clean, straight bole, without a branch for forty feet above the ground. It was from such trunks that the early Hawaiians fashioned their dugout canoes, which, with the addition of an outrigger, made very seaworthy crafts. The beautiful golden brown color and variegated grain of the wood makes the koa particularly prized for interior finish, furniture, and musical instruments, but the most accessible supplies of these trees have long since disappeared.

In the Waiahole plantation the *Hydnocarpus anthelmintica* trees have made the best showing thus far, with an average height growth of three feet the first year from planting and a maximum growth of four feet eight inches. A two-year-old tree of this same species planted at the Government Nursery in Honolulu is now 13 feet high.

There will soon be added to this plantation a new chaulmoogra tree from the Philippine Islands, where five species are found. This is the *Hydnocarpus Hutchinsonii,* from the seeds of which chaulmoogra oil is also said to be extractable.

The State Park Conference at Gettysburg

THE value of state parks as an educational force for nature study and camping, as game preserves, and for the advancement of the cause of conservation will be emphasized at the Fourth National Conference on State Parks, at Gettysburg, Pennsylvania, May 26, 27, 28. Judge John Barton Payne, former Secretary of the Interior and for many years president of the Board of South Park Commissioners of Chicago, states that the program will cover a wider range than at the three prior annual conferences.

The presiding officers at this fourth conference, besides Judge Payne, who is serving his fourth term as president, will be David Whitcomb, of Seattle, Washington, formerly president of the National Park Association; Senator Peter Norbeck, of South Dakota; Dr. Henry C. Cowles, of Chicago, president of the Wild Flower Association of America, and J. Horace McFarland, of Harrisburg, Pennsylvania, president of the American Civic Association. Governor Gifford Pinchot, of Pennsylvania, will be the principal speaker at the closing session of the conference, on May 28.

The conference delegates, who are named by governors of states and who also come from all parts of the country as representatives of civic associations, are to make a tour of inspection of the Gettysburg battlefield and will visit Pen-Mar Park and other points of interest.

Every tangent of the subject of state parks is to be presented at the conference sessions.

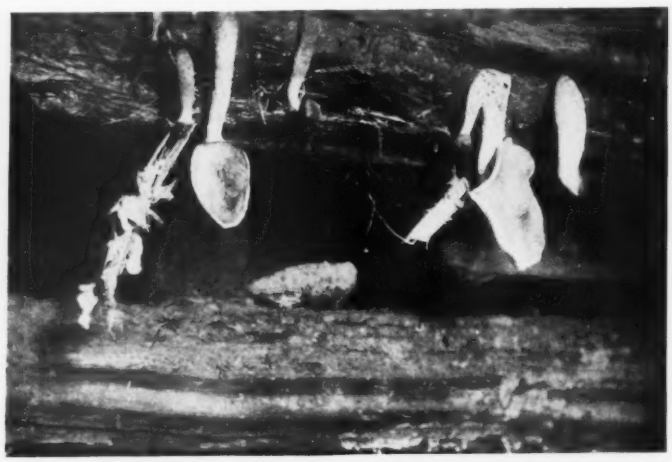
The objective of the conference is the realization of a system of national and state parks that will be separated by distances not to exceed 100 miles.

The officers of the Conference, besides Chairman Payne, are Senator Peter Norbeck, vice-chairman; Miss Beatrice M. Ward, secretary; Mrs. Frank J. Sheehan, treasurer.

The Devil's Flower Garden

By George M. Hunt

SOME of the most grotesque and interesting forms of plant life to be found grow away down under the ground, where few people ever see them. These are the wood-destroying fungi, which grow on mine timbers wherever they find warmth and moisture. Their shapes are so strange and they stand out so boldly in the light of the miner's lamp against the intense underground darkness that it requires little imagination to think of them as the flowers and vegetables of a satanic garden. A knowledge of their destructive effect upon the timbers on which they grow strengthens the simile that they are the home-grown products of the infernal regions,—flowers of the devil.



WEIRD AND FANTASTICALLY FORMED "FLOWERS OF THE DEVIL"

The increasing difficulty of securing adequate supplies of mine timbers is certain soon to call public attention to the great amount of wood which goes to feed these underground plants. In years gone by, when wood was plentiful throughout the country, the miner could get all the timbers he needed at his very door yard, and about all it cost was the labor. Now mine timbers are hauled hundreds of miles, sometimes thousands, before they reach their destination. The timber costs more than it did years ago, and when high freight and labor costs are added, the timber bill for a mine of good size is big enough to cause the management some concern. Mine operators are also beginning to wonder whether they will be able to get timber at any cost in the years not far away.

A VERY COMMON TYPE OF UNDERGROUND FUNGOUS GROWTH

HANGING GARDENS OF HIS SATANIC MAJESTY—FIBROUS FUNGUS HANGING FROM ROOF TIMBERS

A LONG, SNAKELIKE "FLOWER" WHICH WOULD LOOK MORE LIKE A TOADSTOOL IF IT GREW ABOVE GROUND

SHAPELESS FUNGOUS GROWTHS—SURE EVIDENCE THAT THE TIMBER IS BEING RAPIDLY DESTROYED

THREE FAIRYLIKE TOADSTOOLS GROWING OUT OF A TIE IN AN OLD UNUSED TRACK IN MICHIGAN

MEDUSA'S SNAKY LOCKS. IT REQUIRES LITTLE IMAGINATION TO INVEST THIS FUNGUS WITH MYTHOLOGICAL CHARACTERISTICS

Since time immemorial wood has been indispensable to man in his struggle with Nature for the coal and metals which lie buried beneath the earth's surface. Civilization brought steel and concrete to the miner's aid, and they have been of inestimable value; but wood is still his main dependence for supporting his drifts and tunnels, his tracks, his ore chutes, and his many other structures both above and below ground.

Like many other great industries, the mining industry would find itself in a serious predicament if its timber supply were suddenly cut off. It is true, of course, that mines could operate in some fashion by using steel and concrete in place of wood, but the inconvenience and cost of depending entirely upon these substitutes would, in most cases, be so great that extensive operation would be economically impractical. Only the undeniable demands of a country starving for minerals and coal would permit operations at all, except in a few of the most favored mines, and the cost of the products of the mines would be so great that it would necessitate radical readjustment of most of the manufacturing industries of the country.

A GREAT ADVANTAGE OF WOOD AS A MINE-SUPPORTING MATERIAL IS ITS CHARACTERISTIC OF BENDING UNDER HEAVY LOADS AND GIVING WARNING BEFORE IT BREAKS

Although the steel and concrete used by mines amounts to a considerable total, which will undoubtedly grow larger, it is still only a small percentage of the material which goes underground for mine supports, and wood is used in enormous quantities. It is estimated that the annual consumption of wood for use underground is about 293,000,000 cubic feet—the equivalent of the present average annual growth on 23,000,000 acres of forest land.

Wood possesses many advantages. It is light of weight, but strong. It can be worked with the simplest tools and does not require great mechanical skill to fabricate it.

It is relatively inexpensive and easily obtainable. A very important consideration is that it yields slowly to heavy loads and gives warning by its cracking and snapping that it is about to break. This is a great advantage over materials which break suddenly without warning, and thus not only unexpectedly let down tons of rock and debris to be cleared away, but also endanger the lives of the men.

Roughly speaking, an underground mine is a system of main openings from which numerous secondary openings branch out. The main openings are generally required in good working order for a reasonable number of years. The branch openings lead into the coal or ore bodies and are used only while mining is going on in the small area which they serve. This area may be mined out in a few months, the branch opening closed up, and a new one made near by. The timber in these temporary openings, having served its purpose, is usually abandoned when the opening is no longer required. As a rule, no attempt is made to salvage this timber, partly because of the danger involved and partly because the cost of the salvaged and partially decayed timber is likely to run well up towards the cost of new timber or even exceed it.

In some important methods of mining, notably the caving system used in removing ore which occurs in very large bodies, the rock lying over the ore is kept slowly caving down from above, as slice after slice is removed from the top of the ore body. Here the gradual failure of the timber is a valuable property, as it holds up the load long enough to allow the ore to be removed, but finally gives way and allows the openings to close, which is exactly what the miner desires.

Both of the above uses of wood in mines are destructive uses, and it is not necessary for it to have a long life to meet their requirements. There is no need, as a rule, therefore, to apply preservative treatment to timbers used in this way. In the main levels, however, and in shafts (when wood is used) a long life is usually desired from the wood. It is not known what percentage of the total timber used at mines goes into these places, but 20 per cent of the total used underground is considered a reasonable estimate. In addition to this, there are large, but unknown, quantities of timber, lumber, poles, and ties used in the tracks and structures above ground. The total amount of mining timber from which long life is desired is, therefore, considerably more than 58,000,000 cubic feet.

As with every other material, however, the great advantages of wood are offset in a measure by certain disadvantages. Perhaps the chief of these is its liability to decay—that is, destruction by the wood-destroying fungi, which feed upon the wood substance. In the majority of mines conditions underground are very favorable to the growth of these fungi. The temperature is warm the year around and there is plenty of moisture. The absence of light seems to cause no concern to the fungi, for they appear to grow luxuriantly without it. In the worst places timber may rot out in a year. It is very common for the average life to be not over two or three years. Decay, then, to the miner is a matter for serious consideration, and he can well afford to give thought to ways and means of preventing it.

A number of mine operators who have studied the matter have found that the methods used by the railroads in preserving their ties and lumber are effective in preventing decay underground. Even the simpler non-pressure methods used for treating poles and posts will, if properly applied to short-lived mine timbers, make them last several times as long as they ordinarily would without treatment. This knowledge is spreading in the mining industry, and several mines have built wood-preserving plants within the last year or two. It is expected that many more will follow, as the mounting cost and scarcity of timber become more severely felt, and in the course of time his Satanic Majesty will be hard put to find a place to grow his flowers.

From a timber-conservation standpoint the preservation of this timber is important. If it were all given a good treatment, its average life could be trebled at least. This would save at least 39,000,000 cubic feet of mine timber annually. A forest fire which destroyed such a large amount of timber would be considered a serious disaster. The waste through decay is so unobtrusive, however, that it receives little notice.

Filtering Camp Water

By F. H. Sweet

WATER-FILTERS are seldom included in camp equipment, yet there are times when they are useful; for a heavy rain will quickly make the water of mountain streams muddy, and boiling will not clear it. A lantern chimney, if you happen to have one, makes a good filter. It should first be thoroughly washed, of course; then one end is covered with three thicknesses of cheese-cloth, tied tightly around the groove in the glass; the chimney is filled with clean, fine sand, and one thickness of cheese-cloth is tied over the top.

If you have a permanent camp near a stream, you can often filter muddy water by digging a hole in the sand of some convenient bar, or, if the bank is low enough, in that. The hole ought to be about ten feet away from the stream and, say, three feet square. Let it extend below the surface of the river as much over two feet as the maker has energy for—the deeper the better. The bottom and sides should be lined with stones and a frame covered with mosquito-netting should be made to fit over the mouth.

Of course, if the stream has been contaminated by sewage, it should under no circumstances be used as a source for drinking water, even when filtered by this device.

Do not forget to dig a trench round your tent as soon as you have pitched it. The object of the trench is to keep the floor of the tent dry when it storms. If you put off attending to it, you may have to get up some time in the night and do the work in the rain.

Laying the Specter of Unconstitutionality

By E. A. Sherman

FOR over fifteen years the impression has prevailed that the Federal Government is without constitutional power to purchase lands for forestry purposes. This impression and belief is directly and chiefly based upon a report by the Judiciary Committee of the House of Representatives, Sixtieth Congress, submitted May 12, 1908; which report resulted in confining forest-land purchases to those "necessary for the regulation of the flow of navigable streams."

Since then any one who has had the vision or hardihood to suggest purchases primarily for forestry purposes, in such places as the formerly famous white-pine region of the Lake States or the longleaf pine region of the South, has always been told: "Oh, but that would be unconstitutional. The House Judiciary Committee went into that question thoroughly and decided that only purchases in aid of navigation are lawful." The objection has usually been accepted as unanswerable.

Recently, in considering the McNary-Clarke Bill, the writer had occasion to inquire into this oft-mentioned Judiciary Committee report. To his great surprise he found that this "verboten" conclusion was largely based upon a complete misunderstanding of a certain court decision. In short, this specter of unconstitutionality is largely predicated on a most amazing error. The report contained six different opinions—three major and three minor. The major opinions, which are the only ones giving authority for the conclusions reached, each laid great stress upon the then comparatively recent decision of the Supreme Court of the United States in Kansas *vs.* Colorado (206 U. S., 46).

Referring to this case, the leading opinion, which was signed by Hon. J. J. Jenkins, of Wisconsin, said:

"And the court reached the conclusion that the United States, under the Constitution, could not for want of power reclaim arid land under the commerce clause of the Constitution or any other expressed power. There is practically no difference between reclaiming arid lands for agricultural purposes and acquiring arid lands for forestry purposes."

Of course, we all know now that the Supreme Court did no such thing. The truth is, that court has always sustained the constitutionality of the Reclamation Act, the most recent and sweeping decision being rendered by Chief Justice Taft November 12, 1923, in the case of Brown *et al. vs.* The United States. The point involved in the Kansas *v.* Colorado case was the Federal Government's power to control the use of non-navigable waters within a state and in disregard of state law.

Yet Mr. Jenkins further declared: "In Kansas *v.* Colorado the Supreme Court denied the right of the United States to reclaim arid lands," and he concludes from this that nowhere in the Constitution can be found any power in the National Government to acquire lands for national forestry purposes, because *"the case in Kansas v. Colorado and the question before your committee are absolutely identical."*

It follows from the above that if the reasoning adopted by the Judiciary Committee was sound, then the numerous court decisions upholding the constitutionality of the Reclamation Act are tantamount to deciding that the purchase of lands for national forestry purposes is also constitutional.

The other two major opinions also misread the Kansas *v.* Colorado decision. Hon. W. G. Brantley reported this case as "holding that *the reclamation of arid land within a state is not within the constitutional power of Congress.*" Hon. C. A. Littlefield, of Maine, came closer to the fact; but even he was wide of the mark in stating that, according to the Kansas *v.* Colorado case, "the United States had no constitutional power to provide for the irrigation of lands other than its own."

It is evident from the foregoing that while the committee's recommendations limited forest purchases to such as would aid in navigation and commerce, the reasoning upon which its restriction was avowedly based was false—a fact which today any western schoolboy could vouch for.

Consideration of the historical aspects of the problem is not without value. The committee acted largely in the dark and in an atmosphere of general hostility to National Forests. The constitutionality of the National Forests created from the public domain was even then being attacked by able jurists, and this question was not freed from doubt until the Supreme Court decided the Light case (220 U. S., 523). Nor was the committee itself free from the prevailing feeling of hostility, as is evidenced by the fact that of the eight members of the committee sitting in the House at the time the final record vote was taken on the Weeks Law, only one voted favorable to the measure, while a second was paired in its favor.

While completely misinterpreting the inapplicable Kansas *v.* Colorado case, one opinion which mentions the quite pertinent case of U. S. *v.* Gettysburg Railway Company (160 U. S., 668) brushes it aside as extreme. The other quotes it only as authority for the limited purchases recommended. In that case the court sustained the constitutionality of the law providing for acquiring and marking the Gettysburg battlefield and resorting to condemnation proceedings, even without the consent of the state.

A complete discussion of the constitutional question involved in the bill for the acquisition of forest lands advocated by The American Forestry Association is not within the range of the writer's capabilities. He does believe, however, that the above showing is sufficient to lay the ghost of the opinion of the Judiciary Committee as being longer worthy of consideration as a real obstacle. Apparently, this view is shared by the present membership of the Agricultural Committees of both Senate and House, as the question of the legality of section 6 of the McNary-Clarke Bill, authorizing the purchase of forest lands anywhere within the watersheds of navigable streams for timber production, even though they may not be necessary for stream-flow regulation, was not even raised.

Nor is it strange that such should be the attitude of Congress. We are consuming our forest resources four times as fast as we are growing new timber. This fact has been known for years; and various efforts have been made to meet the crisis through state action and individual initiative, all without avail. The facts and needs have been verified by an exhaustive study made by a special committee from the Senate. That committee has reported that certain things must be done to prevent eco-

[*Continued on page 306*]

The Elk Poachers of Sheep Mountain

By Louis D. Coughlin

THE Old Ranger threw down his cards on the red horse-blanket, which had been spread on the ground in lieu of a card table. Rising, he kicked a half a dozen unburnt ends of logs into the fire.

"Boys," he said, "having decided by the manly and honorable game of poker that the gentleman who goes by the salubrious title of Executive Assistant to the Supervisor is chosen to arise at 4:30 a. m. and prepare a hearty breakfast for all assembled, I move that he now relate the true facts bearing upon the capture of certain lawless gentlemen discovered in the act of killing elk on Sheep Mountain. Knocking around the hills, I've heard a dozen contrary versions of that little affair and my system just naturally craves truth."

The proposal met with instant approval, and the half dozen rangers, abandoning their places around the red horse-blanket, seated themselves around the red coals of the camp fire. The Executive Assistant to the Supervisor pivoted himself in his seat on the ground, thrust a convenient twig into the fire, and, pulling it out ablaze, calmly lighted his pipe. Above, a Wyoming sky looked down through the eyes of a million stars.

"The Executive Assistant to the Supervisor feels highly complimented by this confidence imposed in his veracity," he remarked. "The story of the encounter with the elk poachers may sound like a tame affair to certain old-timers I need not name, but to yours truly it had the dark sign hung on the best movie thriller in the country. It all started, too, on a quiet Sunday afternoon. The Executive Assistant, feeling the confinement of too much office work, was moving scenery in his front yard when along came Art Stebbins and Bob Raybold, two citizen friends, as it were, and suggested that for real exercise nothing is better than climbing Sheep Mountain. So we harnessed up the car, which carried us to the foot of Moonshine Gulch, where we parked it beside the road. Coming up to Moonshine Gulch, we had driven right through a band of sixty-seven elk—five two-pronged bulls and sixty-two cows—peacefully feeding near the foot of the mountain. They were so tame that Art stopped the car, got out, and took some snapshots. They hardly noticed him. Nine years before, the original twenty-two elk had been taken up the mountain by the Forest Service and released. Increasing in number, they had become tamer and tamer and now enjoyed the admiration and protection, so it was thought, of ranchmen and townsmen alike.

"Well, to come to the story. We had climbed the crest of Sheep Mountain and were on our way down to the parked car, when suddenly—Crack, crack—came the report of two rifles. The Executive Assistant had a hunch.

" 'By Jove! Some one's shooting our elk! Get out the glasses quick,' he said to Art, who was carrying them strapped around his shoulder. Through the binoculars the band of elk, huddled together on a ridge a mile to the south and a thousand feet below, could be clearly seen. The ridge extended easterly from the precipitous side of Sheep Mountain, and after about a mile lost itself in the

Laramie plains. Two of the elk could be seen lying on the ground—clearly shot. Suddenly there came another volley. The band, unaccustomed to gunshots, dazedly moved down the ridge toward a willow grove. Another shot. A cow elk threw back her head, staggered, and followed the band with halting, painful steps. Now one, then another threw back its head, until six were counted, all apparently hit in the fusilade.

"Through the glass we surveyed the surrounding country for the hiding place of the poachers. From behind some rocks two men finally arose and began to stalk the band. Crouching low beyond the crest of the ridge, out of sight of the elk, but in plain view of the watchers high above, they sneaked downward and rounded the lower end just as the sorely wounded animal, trailing the band, was about to enter cover in the willows.

"Kneeling, the poachers sighted their rifles and again—Crack, crack! But the effect was not observed, because the doomed animal was within the cover. Returning to their first kill, one of the poachers proceeded to dress a dead elk, while the other posted himself as lookout on top of the ridge.

"'There's another elk in the draw right under them—standing up, gut-shot,' said Art, as he handed the glasses to the Forest Officer.

WE HAD CLIMBED THE CREST OF SHEEP MOUNTAIN AND WERE ON OUR WAY DOWN TO THE PARKED CAR, WHEN SUDDENLY—CRACK, CRACK!—CAME THE REPORT OF TWO RIFLES. THE EXECUTIVE ASSISTANT HAD A HUNCH. "BY JOVE!" HE EXCLAIMED, "SOME ONE'S SHOOTING OUR ELK"

"Unable to move, it stood there in mortal agony. The poachers must have seen it, but did not choose to put it out of its misery. While we could distinguish the color of the clothing worn by the 'murderers' and could see their rifles, the distance was too great for identification. The sun was going down and darkness coming on. The poachers' means of transportation could not be discovered. It was apparent that, whatever it was, its location lay beyond the poachers and not toward, nor behind the witnesses.

"A council was held. The first impulse was to descend directly upon the poachers and place them under arrest. This plan was abandoned because of the risk of discovery, which would be followed by the poachers getting away and leaving the witnesses with the dead elk and without the killers. Moreover, between them the witnesses had but one gun, a 'pea-shooter,' which was brought along for rabbits.

"Finally a plan was adopted. The three witnesses sneaked down a draw under cover of scattering trees. At the bottom they waited what seemed an interminable time for darkness to grow, so they could cross an intervening ridge without being seen by the lookout poacher.

"When the car was reached we coasted down an incline about a mile to the flat below, and without lights reached the main road at a point twenty miles from Laramie at 6 o'clock.

"Thirty-five minutes later the State Deputy Game Warden of the district reported at the Forest Supervisor's office.

"Having oiled and gassed his car while Art and the Executive Assistant bolted a hasty supper the Game Warden was ready to start a few minutes after 7 o'clock. As the three men were about to leave the Supervisor's office, in came Forest Ranger Williams and Forest Assistant Harmon.

"'Want a little excitement to relieve the tedium, fellers?' asked the Executive Assistant.

"'Sure,' came the immediate response.

"'Well, come on and pile in,' and the return trip, which developed thrills beyond expectation, was begun.

"It was pitch dark, as the Deputy's car bowled along the Rocky Mountain Highway, doing forty per.

"'We'll stop and search every car we meet,' said the Deputy. 'Those fellows are town men. Probably had information that I was out north today, and so they went west. Ranchers would not pull a deal like that on Sunday.'

"Only one empty Ford was checked in nineteen miles. As the twentieth mile was entered, two bright lights were descried far ahead. There was unanimous presentiment in the Deputy's car that they illumi-

nated the way of the poachers. The hunch proved good.

"At the point where the cars would meet there was no object—bridge, culvert, or curve—of which the officers might have taken advantage. Moreover, for several miles the road is straight and wide enough for three cars to pass.

" 'Better put your car across the road in front of them,' suggested the Executive Assistant to the Deputy.

" 'No. Got her rammed once doing that very thing. Have to use judgment, too, in holding up a car on the highway and in the dark. I'll turn her around, so if we fail to stop them, there won't be any delay in making the turn; also, the lights will shine on me to show them I have no gun when I hail them, and to give them a chance to recognize an officer.'

"Suiting action to word, the Deputy swung his car about two-thirds around and got out in front, on one side, while the Executive Assistant took a similar position on the other.

RETURNING TO THEIR FIRST KILL, ONE OF THE POACHERS PROCEEDED TO DRESS A DEAD ELK, WHILE THE OTHER POSTED HIMSELF AS LOOKOUT ON THE TOP OF THE RIDGE

"The approaching car was making time. At twenty yards the officers signaled with their flashlights, the only result of which was more speed, a sharp swerve as the Deputy's car was passed, and quick, long jumps by the officers to keep from being run over.

" 'We want to interview those birds!' cried the Executive Assistant.

" 'We do,' returned the Deputy, as he jammed down the accelerator, and the chase was on.

"The poachers had gained a fair start, and their red tail light almost disappeared in the dust and darkness. The Deputy's speedometer soon registered seventy, and in three miles the red tail light loomed larger and larger. Finally the Deputy's car was almost upon them.

" 'Guess we're going to get them," said Ranger Williams.

" 'I got their license number,' chorused Harmon and Art.

" 'They're stopping!' some one said, as the Executive Assistant, in the right front seat, loosened his .45 in its holster.

"And then the right fore door of the poachers' sedan opened. A rifle barrel protruded. A man with a hunting cap could be seen training the rifle on the pursuers. The high-powered bullet struck close to the Deputy's right front tire, fortunately missing the mark or the officers would probably have been ditched. Again the poachers' car leaped forward and the chase, at terrific speed, was resumed.

" 'I looked at Squeeky Nelson's ranch and saw Wymore's,' Ranger Williams afterwards stated. The two ranches are three miles apart.

The limit of the Deputy's car was just over seventy, which was maintained, and near Laramie the Deputy's party began to creep up.

"Coming into Laramie the highway crosses the Laramie River on a steel bridge barely wide enough for two cars to pass. Among autoists, a rule of courtesy demands that the first on the bridge has right of way, and the other car waits. As the killers approached this bridge, an auto traveling in the opposite direction beat them to the bridge, and the Deputy caught up—almost, but not quite.

" 'Jump their running board,' yelled the Deputy to the Executive Assistant, and yours truly swung out ready to make the leap. Both men thought that the car on the bridge would block the way of the poachers. As the Forest Officer was about to make the leap, the poachers' car shot forward. The car on the bridge had gotten over, permitting it to pass. At the same instant, the Deputy, sensing the situation, 'stepped on the gas.' The Executive Assistant, poised for the leap onto the poacher car, was catapulted into the air. Right then and there yours truly left the party. But fool for luck. Lit on my head and didn't get hurt. From here on I'm naturally giving you facts second hand, but facts nevertheless.

"Once across the bridge, the Deputy's car had the more pep. With his two left wheels over the shoulder of the grade, he drew alongside, but the poachers crowded him over into the ditch, nearly wrecking both cars.

"A turn was made into the street next in importance to the main one of the town. Hard pressed, the poacher gunman again trained his rifle on the officers. Just as Ranger Williams, who had crawled into the front seat unwillingly vacated by the Executive Assistant, broke out the windshield with the Deputy's high-powered rifle in

hand, the poacher blazed away. The flashes were right in the faces of the officers, but the bullets went overhead until the poacher's magazine was emptied. Meanwhile Ranger Williams, who, by the way, is barred from all the turkey shoots in his district, got in execution. In the darkness and dust and with both cars running wild, he put a shot fairly through the middle of the fugitive's gas tank, but too high to drain it. He failed to hit a tire, and finally had to desist because of danger to pedestrians.

"Right through the street raced the cars. A bewildered citizen got in the Deputy's way; then a car on an intersecting street, giving the poachers a two-block lead. They switched off their lights and dodged up a side street, while the officers played them for going right through the town to the country beyond, so they could dispose of the evidence. 'Played,' because the officers could not swear that dead elk were actually in the car.

"While all this was going on, the 'casualty' regained his feet and picked a handful of hard-road gravel out of his eye and ear. An eighth of a mile to the nearest telephone was made in nothing, flat. Raising the sheriff's office, he gave him the license number of the poachers' car and explained the circumstances.

"When the Deputy, finding that the poachers had given him the slip, doubled back to the court-house, the sheriff was ready with the information. An hour or so later the owner of the poacher car, a prominent business man, and his partner in crime, another P. B. M., were apprehended, but not until they had cached the evidence and changed clothes.

"In a few minutes the Deputy had them both 'coming' and 'going.' An offer to plead guilty to illegal killing of elk, provided the shooting charge was not pressed, was accepted. They took the Deputy out to their cache and produced eight quarters of cow elk, and the following morning they paid $200 each to the State of Wyoming.

"But the punishment did not end with the payment of the fines. By no means. The news, first one item and then another, leaked. The local paper carried a red-hot editorial. The citizens at last awakened to the need for game-law enforcement. The Supervisor's office was swamped for a week with callers. Even men who were not above nipping a grouse or a deer expressed their indignation in no uncertain terms. 'About as much sport as shooting milch cows'; 'Take their licenses away and give them none for five years'; 'Put teeth in the game laws'; 'If it only costs $200 to kill one of these elk, why spend $500 on a trip to Jackson Hole,' and such expressions were heard at every turn. One ancient citizen put in several days between the offices of the Prosecuting Attorney, the District Judge, and the Supervisor trying to induce further prosecution. It was not until he admitted that he failed to provide a cover for his ashpit, as required by city ordinance, that he desisted. Ranchers came to town and published notices prohibiting hunting on their premises. Friends of the poachers were disgusted with them. And all this only a few years after a citizen had been turned loose when he admitted his guilt and had offered to plead guilty."

Scouts Stage Forest Protection Pageant

ON APRIL 21 the Boy Scouts of Washington helped the Forest Service celebrate *Forest Protection Week* with a pageant and tableau emphasizing the annihilation of the *"Demon of Forest Fires"* and a trial of *"Careless Camper* and *Careless Smoker."*

At 10:30 the Scouts passed in review before President Coolidge, in front of the Executive offices, carrying banners with slogans and drawing floats, all stressing the destruction of forests by fire. Standing with the President were Senators from the Committee on Agriculture and Forestry and members of the House of Representatives, who selected as prize-winners the most effective banners and floats and the most striking slogans on the destructiveness of forest fires from those carried by each troop. These prizes, supplied by The American Forestry Association, were: 1st, Radiola III two tube radio receiver with tubes and head phones; 2nd, Parts for bulb radio set, suitable for use in troop room or camp; 3d, A Stanley tool-chest containing twelve tools; 4th, Red Cross First Aid kit; 5th and 6th, Boy Scout binoculars, and 7th, 8th, 9th, 10th, and 11th Stonebridge Collapsible candle lanterns.

The Scouts marched on to the Sylvan Theater, south of the Washington Monument, where an effective tableau was staged. From a thousand to fifteen hundred Scouts took part in the action, which centered about a "Careless Camper" and a "Careless Smoker," and the result of their letting the "Demon of Fire" get away in the woods, utterly destroying the green forests. These actors were shown leaving the scene just as the "Forest Ranger" arrived, in time to trace without doubt the origin of the fire. Seeing the destruction caused by carelessness, the ranger jumped on his horse, overtook the culprits, and hauled them back under arrest. The next scene showed the trial of the careless ones, the court-room filled by the "General Public," representatives of the "Forest Service," the "Boy Scout Committee," etc. Without retiring the jurymen leaped to their feet and announced the unanimous verdict of "Guilty!" The "Judge" then passed sentence and the culprits were led off the stage.

The head of the "Boy Scouts" announced that a troop of Scouts has been sent out to bring in the "Demon of Forest Fires." They came on, dragging the "Demon," which was making strenuous efforts to get away. It was finally subdued, smothered by members of the Scouts, and burned in effigy. This ended the tableau.

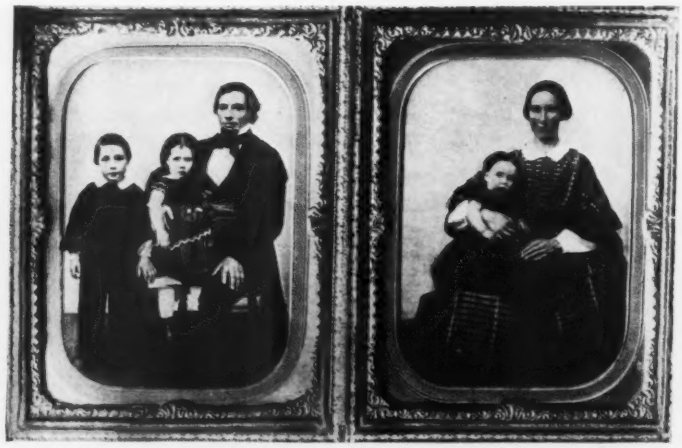
It was followed by an inspirational talk by Secretary Wallace and the awarding of the prizes given by the American Forestry Association. The Scouts then gave the pledge of allegiance to the flag, and the exercises ended by the singing of "America."

A Monument to the Memory of the Argonauts

By Theodore M. Knappen

Research Bureau, National Lumber Manufacturers Association

ON an eventful 15th of March, seventy-three years ago, there arrived in San Francisco a young man from Washington, Maine, named Joseph Russ. Five months before he had yielded to the California gold fever, which was then sweeping over the world, and took passage on the good ship *Midas* via Cape Horn. Though the young man had the gold fever, it did not displace his New England foresight, and on the way he purchased a large quantity of flour, which he took to San Francisco with him. He also took with him from New England what would today be called a "knock-down" house —in other words, a building in sections, which needed only joining for erection. His idea was to open a grocery store, with flour as his main stock. But the gold rush was too alluring when he reached San Francisco, so he sold his building and flour at a small profit, and in company with six other men bought a boat and started up the river to Sacramento and the diggings. There the boat was sold and Russ proceeded to White Oak Springs, where he took charge of a small sawmill. This was the beginning of a California career which proceeded prosperously and built up in after years a great estate of lands, forests, pastures, horses, sheep, and cattle. Mr. Russ died in 1886 at the age of 61.



REPRODUCTION OF A QUAINT DAGUERREOTYPE OF JOSEPH AND ZIPPORAH RUSS, WITH THREE OF THEIR CHILDREN, MADE IN THE EARLY DAYS

Recently his widow, Zipporah Patrick Russ, dedicated to his memory a monument that is in part already 2,000 years old and that may be expected to survive so long as the world endures as it is. This memorial was a gift to the State of California, for the Humboldt State Redwood Park, of 166 acres of virgin redwood forest near Orick, in Humboldt County. The land presented to the state by Mrs. Russ contains nearly 30,000,000 feet of standing redwood timber, besides several million feet of other species, and its money value is not far from $120,000. One of the trees in the grove is thought to be possibly the largest *Sequoia sempervirens* in existence, as it measures more than twenty-one feet in diameter. The tract is still in its primeval state and many of these acres have probably never been trodden by the foot of man. Mrs. Russ stipulated that the timber on this memorial tract should never be cut or destroyed, but that it should be forever kept in its natural condi-

tion—an injunction favored by the fact that mature redwood trees are practically fireproof.

A bronze tablet affixed to a boulder in the grove at the time of the ceremonial dedication, September 2, contains the following inscription:

"This Grove
Is a Memorial to the
Pioneers of Humboldt County

A Gift to the State of California
June 5, 1923
From Zipporah Russ, a Pioneer of 1853
Who crossed the plains from Illinois 1852,
Leaving May 6, arriving Oct. 26.

In memory of her husband
Joseph Russ, a Pioneer of 1852
Who leaving Maine November, 1849
Came around the Horn, arriving March 1850."

In speaking of the gift, Mr. J. D. Grant, of San Francisco, chairman of the Board of Directors of the Save the Redwoods League, remarked that the gift of a redwood forest by Mrs. Russ in memory of her husband and the other pioneers with whom he worked to build up the California commonwealth was peculiarly fitting. "The redwoods, or *Sequoia sempervirens*," he said, "are typically Californian. They are found only in this state, and every lover of California's natural charm, whether a newcomer or one who has been here since pioneer times, appreciates the need of saving representative tracts of this fast-disappearing species. The Russ family, who have held this valuable timber for years, have made this gift out of their love for the redwoods and their desire to share their beauty with their fellow-citizens for all time."

[*Continued on page 306*]

Photographs by H. C. Tibbitts

A SECTION OF THE MAGNIFICENT REDWOOD GROVE GIVEN BY MRS. RUSS TO THE STATE AS A MEMORIAL TO HER HUSBAND AND CALIFORNIA'S PIONEERS. SEVENTY YEARS AGO ZIPPORAH RUSS, THEN A YOUNG GIRL OF SIXTEEN, TOOK HER COURAGE IN HER TWO HANDS, MARRIED THE MAN OF HER CHOICE, AND FARED FORTH WITH HIM INTO AN UNKNOWN LAND—THE WILDERNESS OF THE WEST. THE OVAL INSET SHOWS MRS. RUSS AS SHE LOOKS TODAY

A Forest Without Benefit of Clergy

AN UNIQUE PROVISION OF THE WILL OF JOHN BRYAN BANS RELIGIOUS SERVICES FROM A BEAUTIFUL FORESTED TRACT GIVEN THE STATE OF OHIO

By A. K. Chenoweth

WHEN John Bryan hired men to drive keg after keg of long spikes into the magnificent trees on his estate at Riverside, Clark County, Ohio, in rebellion against the era of mad commercialism which, he declared, was measuring everything in dollars and cents, he set the stage for an interesting controversy which has been waged in and out of the state capitol for almost five years. Happily, it recently has been adjusted, and by the adjustment the people of Ohio are the possessors of one of the most beautiful tracts in the Middle West.

John Bryan had long been known as the eccentric sage of Riverside. He was immensely wealthy, but the source of his money was for many years a matter of keen speculation. His rebellion against commercialism was only one of his many peculiarities, but on this subject his feelings were most intense. He swore that the great trees which forested his estate of 500 acres should never fall the victim of man's greed for money—neither while he lived nor afterwards. To make sure of the latter, he had his trees heavily rifted with spikes that would bring to grief the best steel saws.

Some years later—in 1918—John Bryan, millionaire and philosopher, died, and when his will was probated public interest was drawn to this item:

"My Riverside farm, consisting of 500 acres, more or less, situated southeast from and near Yellow Springs, Ohio, I give and bequeath to the State of Ohio,

BEAUTIFUL ROCK FORMATIONS, TYPICAL OF THOSE FOUND BY THE THOUSANDS ALONG THE TRAILS ON THE FIVE-HUNDRED-ACRE ESTATE

THE ENTRANCE TO THE GORGE OF THE LITTLE MIAMI RIVER, JUST AT THE EDGE OF THE BEAUTIFUL TRACT COMPRISING THE ESTATE

conditioned that said farm be cultivated by the state as a forestry, botanic and wild animal reserve, and experiment station, and call it after my full name, the John Bryan Natural History Reserve, and conditioned, further, that my body and my wife's body shall never be disturbed nor the tombs molested on said reserve; and it is further conditioned that the State of Ohio shall not allow or establish any religious public worship to be practiced or promulgated on said reserve; nor shall the state exclude from said reserve well-behaved people of any race or color in the world."

Should the state accept this gift? Public sentiment was divided, and the thing which caused the schism was the sentence containing these words: "and it is further conditioned that the State of Ohio shall not allow or establish any religious public worship to be practiced or promulgated on said reserve." The controversy waged from one year to another. Two governors, Cox and Davis, refused the gift because the will banished religious services from the property. The last Buckeye legislature again voted to accept the John Bryan Reserve, and when Governor Donahey vetoed the measure of acceptance the legislature put an end to the controversy by passing the measure over the governor's veto.

John Bryan's reason for excluding religious services from the property willed to the state is said to have been due to his being annoyed from time to time by camp meetings and chautauquas held near his home. He is said to have contended that such meetings stir up dissension. Another clause of his will provided that unless the state accepted the property under the conditions imposed it should be sold and the proceeds used for furthering the beliefs of Bryan. It was, therefore, a case of the state accepting the tract under the terms of the will or of losing it altogether.

The state will use the tract as a public park and forest, where it will carry on extensive experiments supplemental to the Ohio Experiment Station at Wooster.

It will also be developed as a fish and game reserve. The area is especially remarkable for its virgin forests, its great variety of wild flowers and shrubs and its natural topography. Because of its wild and rugged nature and its well-watered character, it is well adapted not only to recreation, but to the growing of forests and the propagation of game. Students of geology, forestry and botany, as well as nature-lovers, have in the Bryan forest a place rich in all forms of natural life and in formations valuable for geological research. The state's experiments on the tract, it is planned, will be of the most advanced type and should provide information of great value to the state in the handling of its forests.

THESE GREAT ROCK FORMATIONS ARE FOUND IN THE WOOD AND GRASS LAND ADJOINING THE RIVER—ROCKS WHICH HAVE UNDOUBTEDLY WITHSTOOD THOUSANDS OF YEARS OF FROST AND WATER EROSION

According to Dean C. G. Shatzer, of Wittenberg College, Springfield, the preserve is a striking example of water erosion, when the great glaciers began to dissolve after covering this portion of the country about 50,000 years ago, the water following certain rock cleavages. A limestone fissure provided a line of least resistance, in which thousands of years of water erosion created the beauty of the Little Miami Valley in Ohio, of which the John Bryan estate is a portion. President Arthur C. Morgan, of Antioch College, declares that the Bryan tract includes more varieties of native trees and shrubs than any other similar area in the United States.

In recognition of the many interesting features offered by the tract, the Ohio State Forestry Association held its annual meeting there last summer, and all who attended were deeply impressed by the beauty of the area and the wealth of the forest growth.

But Ohio's newest forest is not adapted to automobile traffic. One must go afoot to get to the heart of the region and to appreciate its value from all standpoints. The gorge of the Little Miami River, which is near the Bryan estate, must also be reached on foot, and it is the hope of many people that the state may in time be able to add this natural wonder to the state-owned property.

Of John Bryan, the sage of the Bryan farm and of Riverside, as he was called, much could be written. He was so entirely different from all other men that residents of that part of the state are unable to point to any one respect in which he was different. He was a poet, an inventor, and by nature a Bohemian. His intense interest in the welfare of his fellowmen at times created much antagonism. For many years his hobby was alfalfa, and he aspired to be known as the "Alfalfa King." He spent countless thousands of dollars in experimental work which he conducted. He developed a new plow, intended to solve the difficulty of turning at the corner of a field, and spent thousands of dollars uselessly in endeavoring to promote it as a commercial venture. His barn is considered the largest and most remarkable in the entire State of Ohio and one of the most unusual in the country. It is reported to be second in size only to that of the late Czar of Russia. It is 208 feet long, 130 feet wide, and 75 feet high; has five floors, eight faucets of clean spring water, will accommodate 100 horses or 200 cattle, and was built to hold 2,000 tons of alfalfa, which he expected to produce on his farm. The barn is considered impractical and the inscription on the walls includes these words: "The cost is unknown." A recent "L" addition to the barn is much larger than most of the barns in the state.

[*Continued on page 317*]

Bears in Camp

By Charles E. Bradner

BROWNIE POSES FOR HIS PHOTOGRAPH

A FOREST ranger stationed at a lumber camp far back in the mountains of Montana and commissioned to scale logs cut from Uncle Sam's forests had just completed his noonday meal atop a deck of logs. Leaving a few remnants of his lunch, he descended the rollway to scale a log which he had overlooked. It was a short log, almost hidden from view in a hole beneath the deck. In his endeavor to reach the end of the log with his scale rule, the ranger squeezed and worked his way into the hole. Prone on his back, he was working his way out, when near the edge of the rollway he glanced skyward and found himself looking up into the face of a huge brown head with piercing eyes and lolling, red tongue.

ONE OF BUSTER'S FAVORITE HAUNTS—THE OVERFLOWING HORSE TROUGH

"Woof!" Dirt and bark flew from the ranger's hobnailed shoes, as he retreated back into the hole, and a stopwatch could not have recorded the brief time in which he scrambled into an opening in the logs hardly large enough to lodge a sixteen-inch log. He came out on the other side of the deck, his hair on end and a triple dose of perspiration beading his face. Sitting calmly on the top of the logs, munching the ranger's unfinished lunch, and watching him with squinting piglike eyes, squatted a large brown bear. The bear seemed to be enjoying the peculiar ground-hog antics of the ranger about as much as the morsels from the lunch. The ranger, encouraged by distance and the discovery that the huge face did not belong to a "silver tip," opened an attack with stones, and the bear finally shambled off into the cover of the woods.

That was the beginning of "Brownie," as he was afterwards called. The lumber camp was situated in a draw about a mile below the scene of Brownie's first appearance. The camp was bounded on one side by Cedar Creek and on the other by a steep rock slide. Some seventy-five men were employed by the company. On the following day Brownie repeated his visit to the forest ranger, scaling logs on the rollways, and then on a June evening, just before dark, he made his first official call at the lumber camp, a mile below. He came down over the upper edge of the rock slide, and of course the loggers tumbled out to see him. Some raided the cook-house of its delicacies, and Brownie enjoyed a large evening with cookies and honey-soaked bread, which the men threw up to him.

BROWNIE AT EASE, PATIENTLY WAITING FOR THE HONEY TO POUR

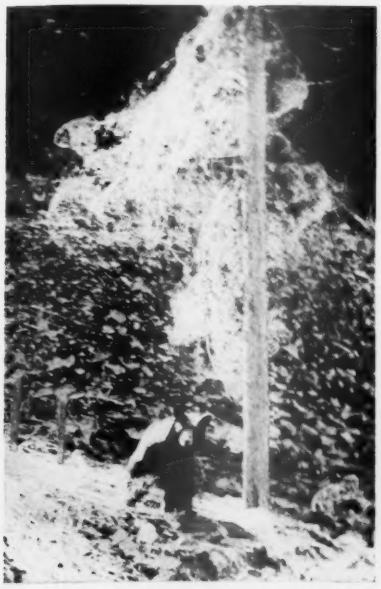
Brownie came back the next evening and every evening thereafter, until finally he adopted the camp as his boarding place, came and went freely, and was fed by all.

When first seen, Brownie was shaggy and thin, but after several weeks of camp life he filled out wonderfully, and for all his yearling days he tipped the scale in the neighborhood of two hundred pounds. Brownie's slick and well-fed appearance must have been the envy of all beardom, because one noon a big, dark cinnamon bear appeared on the rock slide, sniffed the air, and cautiously sidled down toward camp. He was rewarded by the discovery of a half-eaten hunk of beef which Brownie had left. This he bolted and frightenedly lumbered back into the woods. But the bear reappeared, accompanied by two cubs several months old. Mother bear endeavored to herd her offspring back under cover, away from the suspicious-looking menfolk, but the aroma of honeyed bread wafted up to their wiggling nostrils was enough to start them down over the rocks. Almost into camp they came. mother bear right on their tails. One cub, slower than the other, received a cuff, and scampered whimpering back into the timber; the other cub, frightened now by the demonstrated anger of its mother and the sudden appearance of

BROWNIE WALKS THE STRAIGHT AND NARROW

PALS

THE LUMBER CAMP AT CEDAR CREEK, WHERE, AFTER BROWNIE'S FIRST APPEARANCE, HE SOON BECAME A FAMILIAR FIGURE. IN FACT, IT BECAME BEFORE LONG HIS FAVORITE BOARDING PLACE AND HE WAS SOON THE PET OF THE MEN. THE INSET SHOWS THE BIG BROWN MOTHER OF THE TWO CUBS MENTIONED IN THE STORY



THIS CHAP WEIGHED IN THE NEIGHBORHOOD OF 600 POUNDS AND WAS THE LARGEST BLACK BEAR SEEN FOR MANY YEARS IN THE CŒUR D'ALENE

many two-legged creatures, scrambled up a white-pine tree near camp. The tree towered some eighty feet, but Johnnie bear, slapped once in the rear by mother, made short work, as he pulled himself into the very top of the pine, and there he remained, swaying with the wind, squalling and much afraid. Things quieted down after the men had gone to work, and finally the cub backed down the tree and hurried for the woods and chastisement.

Brownie must have been an advocate of advertising, because within the next month as many as nine different bears, ranging from cubs to a five-hundred-pound black bear, visited the camp. Five bears —Brownie, of course; Buster, another yearling; the old she bear and her two cubs—became regular daily customers, while the huge black bear came down into camp possibly once a week.

BROWNIE AND THE BULL-COOK PREPARING TO SAW A LOG

Buster and Brownie became regular pets, sometimes remaining about camp all day. Brownie tamed so easily that he even entered the bunk-houses on inspection trips. He thought nothing of stretching out full length in a sawdust pile several feet from the road to watch the men and horses, for the horses, too, soon became accustomed to the bears. The camp's facilities were made use of by Brownie and Buster. Sometimes they bathed in the creek, but preferred to squeeze themselves in the watering trough, much to the consternation of the barn boss, who had all he could do to keep them out.

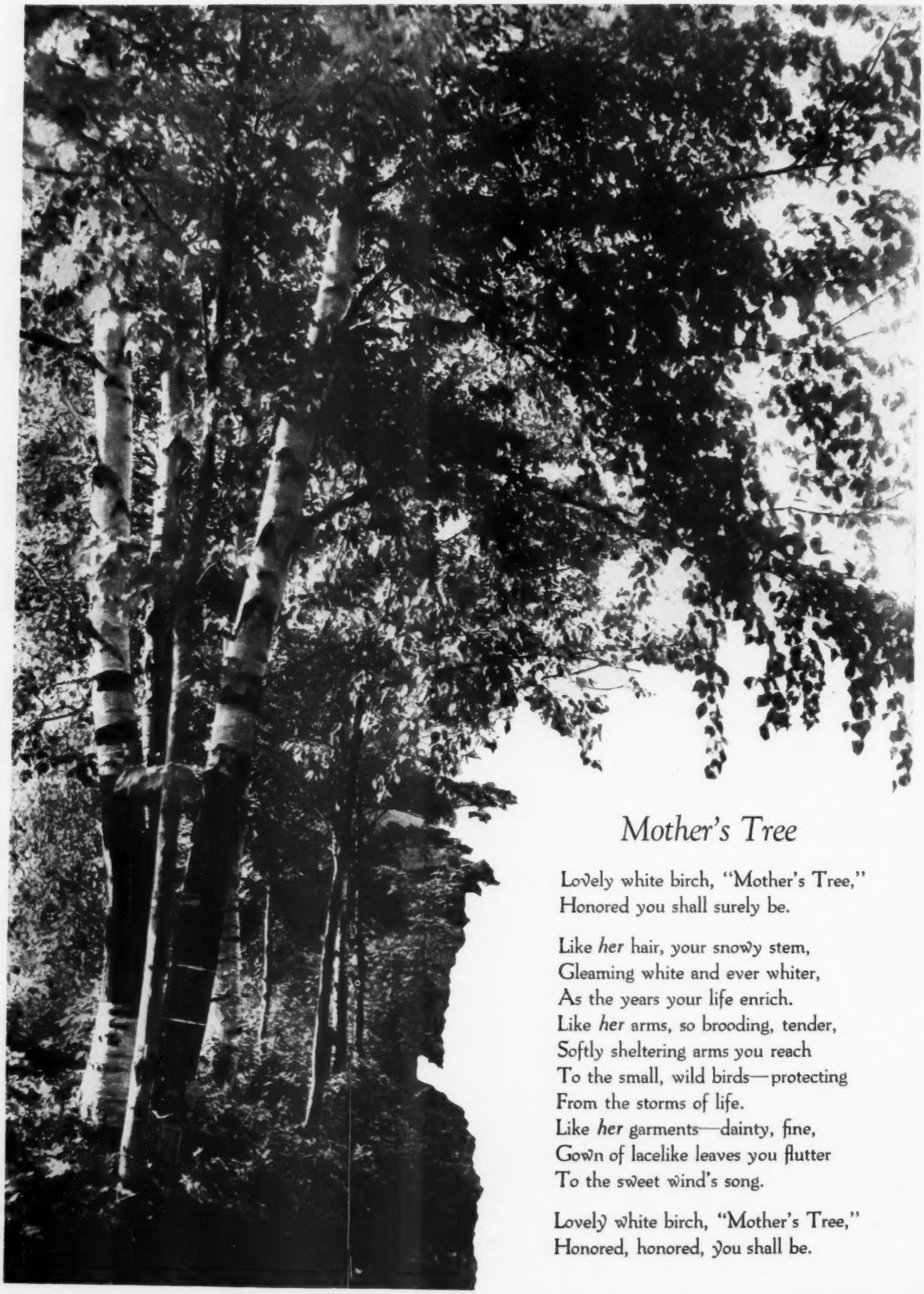
The bears seemed to take an especial liking to the bull-cook (choreman) and to the camp foreman's fourteen-year-old son. The bull-cook in his daily chores had an interested and curious follower in Brownie. Logs to be sawed for cook-house use were rolled up on skids, and as the bull-cook measured off the proper stove lengths, Brownie, atop the log, would follow down the entire length, sniffing assent to each measurement. As the bull-cook would prepare to saw, Brownie would stretch out full length, grasp the log, and quiver with delight to the log's trembling as the saw cut through. Bob, the foreman's son, was on intimate terms with most of the bears, feeding and rubbing them at any time. He was the only one who could feed the dark-red she bear, while the writer of this article held the privilege of feeding the big black bear.

A TUG OF WAR—EXERCISING EVERY BIT OF POWER AT THE MAN'S COMMAND, WHILE THE BEAR HOLDS THE CHUNK OF MEAT EASILY WITH ONE PAW

After several months of camp confiscation by the bears, the cook became exacting in food distribution and the bears were not so welcome. Up to this period the refuse boxes had not been tampered with, but the bears seemed to sense their unwelcomeness and so only nightly raids were made by the majority.

As fall approached, the bears became restless and Brownie and Buster only made daylight appearances. The opening day of the hunting season marked the last visitation of the wiser bears. It would seem that men who had fed and been amused by the antics of wild creatures would not think of taking their lives as soon as the killing season opened, and yet several pets were murdered for

[*Continued on page* 305]



Photograph Copyright J. Carleton Bicknell

Mother's Tree

Lovely white birch, "Mother's Tree,"
Honored you shall surely be.

Like *her* hair, your snowy stem,
Gleaming white and ever whiter,
As the years your life enrich.
Like *her* arms, so brooding, tender,
Softly sheltering arms you reach
To the small, wild birds—protecting
From the storms of life.
Like *her* garments—dainty, fine,
Gown of lacelike leaves you flutter
To the sweet wind's song.

Lovely white birch, "Mother's Tree,"
Honored, honored, you shall be.

The Tree that Honors Motherhood

A White Birch, Dedicated to the Mothers of Our Presidents, Planted in the White House Grounds

THE beautiful custom of planting a tree especially dedicated to mothers has been nationalized by the American Forestry Association, and it is the hope that before long every town and village, every city and every sovereign state, will be able to point with pride to a beautiful white birch planted in some public place—a testimonial to the spirit of motherhood.

The white birch (*Betula laciniata*) was chosen because of what may be called its personal characteristics—its dignity and beauty; its white stem, which whitens with the years; its habit of growth, with drooping, sheltering arms; its beautiful cut-leaved foliage; and very important also is the fact that it grows and prospers nearly everywhere. In some sections, where it is native, our paper birch (*Betula papyrifera*) is used, but unfortunately for public purposes this is not so practical a choice, because its loose, hanging white bark offers an almost irresistible temptation to the souvenir collector; and where a tree is completely surrounded by a wire guard much of its natural beauty is disguised.

Following its choice last year by the American Forestry Association as the "Mothers' Tree," many white birches have already been planted throughout the country. The original Mothers' Tree was planted on the shores of Lake Antietam, in Pennsylvania, on May 13, "Mothers' Day," 1923, and exercises are to be held at the tree this year on Mothers' Day, May 11.

In Washington, D. C., on that date, a white birch which has been planted in the White House grounds is to be dedicated with appropriate ceremonies in honor of the mothers of our Presidents. Rev. Dr. J. J. Muir, chaplain of the Senate, will make an opening prayer, President Coolidge will speak, and Mrs. Coolidge will put the first earth on the tree. A program of patriotic songs will be sung by hundreds of school children and a section of the Marine Band will furnish the music. Thirty bouquets of white flowers, each bearing the name of the mother of one of our Presidents, will be banked around the tree, and at 12:30, when the dedication takes place, the chimes of Epiphany Church, in the heart of Washington's business district, will peal forth a special selection of songs, leading with "Home, Sweet Home." This effective program has been worked out by Mrs. Eva C. E. Chase, a vice-president of the Susan B. Anthony League and of the District Federation of Women's Clubs, under whose auspices the planting is being done. When Mrs. Chase brought up the idea of planting a Mothers' Tree it was enthusiastically received and she was requested to carry it through, which she has done in characteristic fashion. She immediately got in touch with the American Forestry Association, secured its active cooperation and that of Col. C. E. Sherrill, in charge of Public Buildings and Grounds, to the end that the Association donated the white birch tree, chosen from a nursery in Virginia, the home of our first President, and Colonel Sherrill has chosen the site for the tree in the White House grounds and generously offered the facilities of his staff in the execution of the planting and of the ceremony of dedication.

The spade with which the original Mothers' Tree was planted is the property of the American Forestry Association, and Mrs. Coolidge will use it to put the first earth on this tree, dedicated to the mothers of our Presidents.

The Association has broadcasted a special appeal to the governors of all of the states, asking them to take advantage of the opportunity this year—Mothers' Day—to issue a proclamation or bulletin calling this matter to the attention of their people and urging the planting of Mothers' Trees, not only by organizations, but by individual citizens. There has been a prompt response to this appeal.

The Association will be glad to have reported to it all such plantings, so that they may be properly recorded and report made of them in its magazine. In such cases, and where they are requested, the Association will be glad to issue a "Certificate of Planting," if detailed information regarding this planting is furnished.

A tree-planting program (which is generally adaptable), Arbor Day information, and advice as to how to plant, the selection of shade trees, etc., will be sent at once by the Association upon application to its headquarters in the Lenox Building, Washington, D. C.

EDITORIAL

Conservation—Politically Speaking

FOUR years ago the Republican National Convention, meeting in Chicago, adopted a platform from which we have resurrected a plank stamped "Conservation." Holding it up to the light and adjusting our spectacles, we read:

"Conservation is a Republican policy. It began with the passage of the Reclamation Act, signed by President Roosevelt. The recent passage of the Coal, Oil, and Phosphate Leasing Act by a Republican Congress and the enactment of the water-power bill, fashioned in accordance with the same principle, are consistent landmarks in the development of the conservation of our natural resources. We denounce the refusal of the President to sign the water-power bill, passed after ten years of controversy. The Republican Party has taken an especially honorable part in saving our National Forests and in the effort to establish a national forest policy. Our most pressing conservation question relates to our forests. We are using our forest resources faster than they are being renewed. The result is to raise unduly the cost of forest products to consumers and especially to farmers, who use more than half the lumber produced in America, and in the end to create a timber famine. The Federal Government, the States, and private interest must unite in devising means to meet the menace."

Since these lines were written much water has run under the mill, and on it a rich scum of oil, and in it some two hundred billion feet of forest material.

Leaving oil to the Democrats, whose rejected platform contained no conservation plank which a faithless donkey might later have to walk, our eye becomes fascinated by the Republican declaration of 1920.

"Our most pressing conservation question relates to our forests."

Four years of a Republican government! Four years of opportunity! Four years of inaction with respect to forest legislation! And this despite the fact that in every Congress since 1920 constructive bills dealing with the forest problem, admitted to be the most pressing conservation question of the times, have been presented to and urged upon a Republican Congress.

What will the 1924 Republican platform say about forest conservation? In the light of the record to date, what can it say? Politics, we are reminded, can always find an answer. But in this instance we believe the only answer the public will swallow hinges on whether or not Congress, within the few brief weeks remaining, enacts the McNary-Clarke Bill, which all agree to be the beginning of a real forest policy for the nation.

Stewards of a Great Trust

SPEAKING before the House Committee on Agriculture recently in support of legislation designed to conserve our forest resources, Mr. Willis C. Hawley, Congressman from Oregon, gave utterance to a thought which we print without comment, lest we mar the beauty of truth simply expressed:

"Mr. Chairman, may I philosophize just a moment?" said Mr. Hawley. "We are stewards of a great trust. We ourselves cannot create in this room any of the things that we enjoy. We did not write the Declaration of Independence or the Constitution of the United States; we did not fight the Revolutionary War; I imagine none in this room participated in the Civil War. We did not begin the educational systems or found the great universities. They were founded by a previous generation. I could enumerate, if time would permit, all of these things that have been given to us by generations that have gone.

"We are holding all these things in trust, including the natural resources of the country. They are ours to use economically and beneficially so far as our needs go. But we have no more right to destroy the forests of the country or to deplete them or to injure them than we have the right to destroy the other things that have been given us; than we have to destroy the Constitution or the general system of public life or our educational institutions, and thus leave the next generation poverty-stricken in those things.

"Therefore, on the very broadest public policy that I can conceive of, we are obliged, as men of sense and wisdom, having some regard for the past and deep regard for the future, to use what of the public moneys it may be necessary to use to conserve these essential factors in the public welfare."

The Wonder Wall of Wood

THE Great Wall of China is one of the marvels of history. It has been said that if the materials of which the wall was built were used to encircle the globe at the equator, they would build a barrier eight feet high and three feet thick. Such an imaginary wall sinks into insignificance, however, when compared to the wall which could be built from the materials cut from the forests of the United States every twelve months. The wood removed annually from our forests, if sawed into cordwood bolts, would construct a wall four feet thick and twelve feet high, reaching *twice* around the world at the equator.

If that is a vague picture, let us sketch another. If the fifty-two billion feet of wood removed from our forests every year were all manufactured into building material, it would construct homes sufficient to house ten million people—almost one-tenth the population of the entire United States. Where does this staggering volume of wood go? It is not left to burn or rot in the woods, because we are quoting only figures of the material utilized. It is absorbed into the body of the nation. Severed from the land, the wood becomes a raw material essential to practically every industry in the nation.

It is a common error to think that the failure of our forests will affect those industries only which are directly dependent upon the forests. The lumber industry, which ranks among the first five of the nation's industries, is the primary forest-supply industry, but it merely converts the tree into forms suitable for use or further manufacture by other industries. The lumber industry itself represents some 38,000 manufacturing plants of a capital investment of almost $2,000,000,000, and employs almost 1,000,000 wage-earners, upon whom 4,000,000 to 5,000,000 additional people are dependent. From the lumber mill the lumber goes in varying amounts to the building industry, the planing-mill industry, the automobile factories, the railroads, the implement and woodenware industries, the coal and metal mines, etc.

The building industry converts the lumber into homes, the background of our American life, and into other buildings. Here wood plays the leading part in the social and industrial life of the country. It forms the main material for 98 per cent of the homes and other buildings in the rural sections of the United States and 60 to 98 per cent of the homes in our cities.

Between the sawmill and the home, lumber has created and built other industries—the planing-mill industry, with plant and capital investments of over $360,000,000; the retail lumber yards in every community of the nation, numbering over 40,000, employing 125,000 people, and representing a capital investment of a billion and a quarter dollars; the carpenter trade, with its million wage-earners; the furniture and cabinet industries, with annual products valued at more than half a billion dollars annually.

Apart from the building industries are innumerable other industries, large and small, whose basic raw material is wood. In the aggregate, the lumber and wood-using industries alone represent a capital investment of more than thirteen billion dollars and give employment to more people than any other industry.

In the face of that picture, Congress and the people of the nation are confronted with the prospect within the next two or three decades of their wood supply being reduced two-thirds. The argument that substitutes will be found is untenable, because present and industrial processes have been developed and built up on the use of wood. A sawmill cannot manufacture brick, nor can a furniture factory utilize its equipment to make concrete. Shrinkage in the wood supply available to American industry means widespread liquidation of investments, unemployment, disruption of manufacturing processes, and wastage of property. It means high-priced wood and higher prices for everything made from wood. It means poorer homes and lower standards of living. It seems inconceivable that a shrinkage of one-half to two-thirds the nation's wood supply can do other than disrupt every channel of American industry and prostrate the whole financial structure of the nation.

Kentucky Comes Back

KENTUCKY, the state which abandoned its forests in 1920, has seen the error of its way. The legislature of the state last month passed a forest law which places Kentucky among the thirty-four states now recognizing by tangible laws the need of forest protection.. Kentucky's new act follows in a general way the law which was repealed by the legislature in 1920. It authorizes the Commissioner of Agriculture to appoint, with the consent of the Governor, a technically trained forester, whose duties will be to advance the forest interests of the commonwealth by promoting appreciation on the part of the public of the importance of forest protection and of reforestation. The bill carries an annual appropriation of fifteen thousand dollars for the forestry work of the state.

Credit for the restoration of forestry in Kentucky is due mainly, it is said, to organized advocacy on the part of women. Thus another chapter in the service of women to the cause of forestry has been written. But credit for Kentucky's return to the fold does not belong all to the women. The figure of a man stands out prominently—Mr. Tom Wallace, of the Louisville Times. Ever since the former Department of Forestry was abolished, Mr. Wallace has been a consistent and fearless champion for the restoration of forestry as a state policy. Kentucky's waywardness in forestry matters, Mr. Wallace has held, has been due to lack of information, and the educational work which he has been able to do throughout the state has unquestionably been a large factor in the victory just attained.

ARIZONA OR TENNESSEE? WRITE DOWN YOUR ANSWER; THEN READ THE STORY

A Chance for Reforestation

By Ferdinand W. Haasis

WHO will be first to name the state in which the picture at the top of this page was taken? Bring out your pads and pencils and write down your guesses. Don't hurry. Arizona, writes one; Utah, another; southern California, guesses a third. All wrong. It is always that way—everybody wrong and the rest give up. Well, the scene is in southeastern Tennessee.

Not only can such places be found in Tennessee, but in one county alone there are about 6,000 acres of such scenery. And yet this same area once bore forests. Not far from here, active timber sales are now in progress in the Cherokee National Forest. Timber is being cut at the rate of 3,000 board feet an acre, with a stumpage value of $5.00 a thousand feet on land which has not previously been cut over. Nor is this the end. The stands will be ready for a second cut 80 years or so from now.

But in the area here under discussion, what do we find? Great trees, remnants of the old stand, partly or wholly dead, with their gaunt, bare branches silhouetted against the skyline, as if in mute appeal for help against the powers which have ravaged them. Broad expanses of denuded land—treeless, bushless, grassless, naked—without protection from the blazing sun or the beating rain, with the surface of the soil stony, hard-baked, and deeply cut by numberless gullies. Torrents during showers, but drouth when the rain ceases.

And what is the reason for this desolation? Why should there be such a desert area in the midst of one of the great primeval forest regions of the continent? Gas, principally. And it all happened before gas was made the most destructive instrument of warfare.

About half a century ago, the old records tell us, copper ore was discovered in these hills and smelting was begun. Towns grew up around the mines, timber was cut, and stock was grazed. In those old days fumes of sulphur dioxid and sulphur trioxid were allowed to escape into the air around the smelters. These gases were responsible for the death of many of the trees and other plants of the original forest. Cutting for charcoal further reduced the timber cover. Both living and fume-killed trees were taken out for fuel. Fires have been frequent—perhaps annual. Grazing, too, has played its part in killing out the vegetation. The net result of all these factors is found in the denuded and devastated areas shown in the illustrations.

As would be expected, this condition appears in its most aggravated form nearest the smelters. It is here that the fumes were most concentrated. And, furthermore, grazing and the other factors mentioned have obviously been more intense close to the towns. At successively greater distances from the smelters, the damage is correspondingly less severe.

Beyond the bare area there lies a belt which is for the most part without trees or bushes, but covered with a dense stand of the tall, coarse, and highly inflammable "sage" grass, or "broom sedge." This covers, perhaps, 13,000 acres. Towards its outer border, trees and bushes begin to come in, and once in a while they are to be found, one or two at a time, well within the zone. Large stumps of the trees of the former stand are not uncommon. In some places in the small coves there are found good stands of young growth. Perhaps these little groves have been somewhat sheltered from the fumes because of their location in small hollows; or, again, perhaps the moister ground conditions have made it difficult for fires to burn here.

Outside of the grass belt there is another partially damaged area of perhaps 35,000 acres. Meeting the grassland on the inside, it extends outward to practically uninjured timber, with all intermediate stages between these two. Here are found snags of white pine and hemlock, killed by the fumes in years gone by; large chestnut and oak trees, alive below, but with bare, antler-like branches above, the result of past fume baths. Even as far as six or eight miles west of the smelters, some of the mountain slopes show naked areas. These are probably to be ascribed chiefly to fume injury, though, perhaps, fires have done their part in removing the vegetation. Eleven miles north of the smelters, lumbermen have been cutting white-pine trees killed years ago by these gases and seasoned on the stump. Mr. A. B. Patterson, who studied this damage some years ago, reported serious leaf injury as far as 26 miles from the smelters in one direction.

Photograph by the Ocoee Copper Company

LYING IN THE DENUDED AREA, THIS TORTURED-LOOKING LAND IS THE SITE OF THE OCOEE COPPER COMPANY'S MINE, IN POLK COUNTY, TENNESSEE

The erection of tall stacks in 1904 modified the gas situation to a considerable extent, allowing the fumes to become somewhat dissipated before reaching the ground. Later developments have resulted in the conversion of the sulphur fumes into sulphuric acid, so that now very little of it is wasted in the air. Indeed, it is sometimes stated that the value of the acid shipped exceeds that of the copper produced.

Besides the effect on the plant growth, there is another aspect to this problem. The superintendent of a power company, with plants downstream from the mining region, writes that acid coming down the river used to cause considerable damage to their water-wheel units. At one plant it was necessary to replace the internal parts of all units, while several replacements were necessary at another plant. Now, however, the river is fairly alkaline. The silt and sand from the rapid gullying, however, constitute a cause of trouble and expense. The settling basins fill rapidly and require frequent sluicing out, and the reservoir itself is subject to serious shoaling.

At present there is a part of the land in the vicinity of the smelters which is used for grazing and farming, but there is unquestionably a considerable portion of it which should be growing timber. We cannot, however, expect the natural reestablishment of a forest upon the gullied lands within any reasonable period of time, and it seems extremely improbable that we shall be able to secure it on those areas which are now covered chiefly with the sage grass. Planting is absolutely essential.

As has been mentioned above, the worst of the fume hazard is now a thing of the past. There is, however, another serious danger, which must be eliminated before success can be looked for in planting operations. This is fire. Reforestation by any means, natural or artificial, is absolutely out of the question until the fire situation shall have been brought under control.

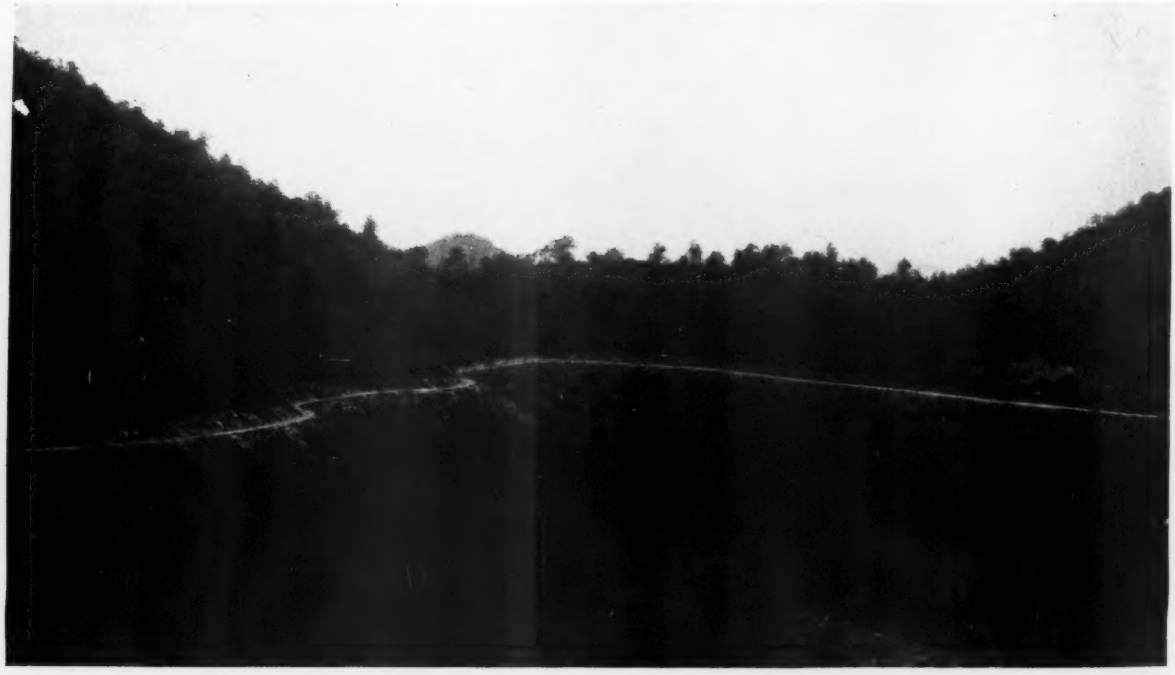
On the gullied lands it will be necessary before planting to check the erosion by means of brush dams or perhaps by seeding with some sod-forming grass. On the grassy areas the few stumps are too widely spaced to mean much in the formation of the new stand, even if they are still able to sprout. It seems unlikely that

Photograph by the United States Forest Service

BARE SOIL—TREELESS, BUSHLESS, AND GRASSLESS—DEEPLY CUT BY INNUMERABLE GULLIES

there is now any very great amount of living forest-tree seed in the soil.

While the fume situation today is incomparably better than in earlier years, yet there is still a certain amount of the gas in the air. Once in a while a sulphurous whiff is caught in the smelter towns, and it is reported by the residents to be quite strong two miles northwest of the smelters on some cloudy mornings. For this reason it will be necessary to use considerable care in any reforestation work and proceed cautiously, with ample preliminary tests of species. White pine and hemlock are apparently among the most susceptible to the fume injury. It would.



Photograph by the United States Forest Service

REGENERATION IS POSSIBLE. THIS IS A VIEW ON THE EAST SIDE OF LITTLE FROG MOUNTAIN, IN THE CHEROKEE NATIONAL FOREST, IN A FUME-DAMAGED REGION. THIS SLOPE WAS ONCE ENTIRELY BARE OF FOREST GROWTH. IT IS NOW RESTOCKING TO OAKS, BLACK LOCUST, AND SHORT-LEAF PINE, WITH BLACK GUM, MAPLE, SOME CHESTNUT, AND YELLOW POPLAR ON MOIST SITES

[*Continued on page* 306]

Trees as Oil Producers

How the Trees of Every Continent Serve as Manufacturing Chemists in the Production of Some of the Most Highly Prized Oils of Modern Industry

By Louis E. Wise

THE old emperor, Yong-Toking, sat ruminating in his palace. His mind was at peace and he had some reason to feel proud. Had not a clever merchant of Sout-Cheou, that center of Chinese craftsmanship, learned the secret of the black lacquer of Japan? Had not that same merchant, staunch subject that he was, brought the technic of applying Yang varnish directly to the palace? Hitherto the lacquer of "slight luster," the Toui-Kouang, had been the main varnish of the empire. It had always been a source of disappointment! Now the Japanese craftsmen would cease to laud it over those of China. That was as it should be. The varnish tree originally *belonged* to China, growing on the slopes of her southern mountains and on her lofty plains. It had been transplanted, imported into Nippon. The best of varnish-making rightly belonged to China. It was her heritage. Thus mused Yong-Toking.

Of course, there were other Japanese secrets that remained to be discovered. Their method of producing the splendid Tchao-tsi, so strangely superior to the Tchao varnishes of China, still had to be unearthed. All of that would come in time. No need for haste. The wild varnish trees of China were being tapped regularly. Their costly juice could be liberally adulterated with cheap tung oil and sold to the foreign devils at a very handsome profit. Of necessity, everything connected with the art of varnish-making must be kept within the walls of the palace. That was evident, even to a child. Lacquerers must keep their hands active and their tongues well under control. Their knowledge must not be noised abroad, especially not towards the West!

In 1732 the quiet old emperor joined his honorable ancestors and Kien-Lung, his ambitious and warlike son, reigned in his stead. The new emperor was not a particularly secretive man, nor was he worried about such trivialities as varnish formulas. What matter to him if the workmen of the palace talked a bit of their prowess as varnish-makers! What if their talk drifted beyond the palace walls? He had affairs of greater moment—campaigns, the suppression of rebellions, the writing of epic poems!

So the lacquerers displayed and discussed their handiwork. One craftsman in particular became more than garrulous. He had recently been converted to Catholicism and he never hesitated in actually demonstrating his skill to the learned Jesuit missionary who had been responsible for his conversion. Thus it was that Father d'Incarville, priest, student, and corresponding member of the French Academy of Science, came to write his little monograph on Chinese lacquer. In it he told how the Chinese grew, tapped, and mistreated their varnish tree and how they adulterated its product with the oil of the T'ung tree—oil which cost them two or three cents a pound—without preventing its sale in the markets of Paris.

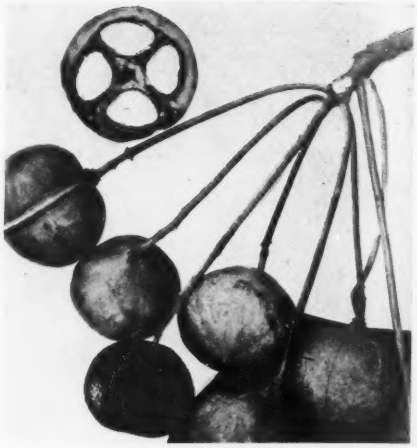
Photograph by courtesy of the Bureau of Plant Industry

BLOSSOMS OF THE TUNG-OIL TREE, WHICH HELP BEAUTIFY THE HILLSIDES OF THE YANGTZE VALLEY IN CHINA AND HERALD THE COMING OF SPRING

There was a reason for this wholesale fraud. The varnish trees of China and Japan (now known under the formidable name of *Rhus vernicifera*) were never famed for their quantity production; nor did their exploiters bother much about their conservation. Some recent observers claim that in Japan individual trees yield as much as *three ounces* of varnish per annum. But this may be a gross exaggeration. Less optimistic observers report an average yield of *one-third ounce* to the tree! At all events, the yields are never large, and in some plantations the ten-year-old trees are cut down and sold for kindling wood after being tapped a few times during one lone season! And so it is not surprising that the subjects of the Emperor Kien-Lung resorted to the use of tung oil as their principal adulterant. Tung-oil trees were, and probably always will be, plentiful in China, and they produce a first-class raw material for the varnish-maker—a material which must be reckoned with in the

Courtesy Plant Industry

FRUIT OF THE COCONUT PALM, FROM WHICH IS MADE AN EDIBLE OIL AND ALSO THE FAMOUS "COPRA," FOR WHICH UNSCRUPULOUS WHITE TRADERS FOUGHT AND DIED IN ISLES OF THE SOUTH SEAS



Courtesy Plant Industry

FRUIT OF THE CHINESE WOOD-OIL TREE THAT DOES ITS BIT FOR THE VARNISH-MAKERS OF THE UNITED STATES, DESPITE ITS QUESTIONABLE REPUTATION AND PAST HISTORY IN CHINA

modernized varnish industry of the United States. A conservative estimate, made a few years ago, indicated that approximately ten million gallons (more than 35 thousand tons) of tung oil were being imported from China, and that the oil was used widely and very legitimately in the domestic production of water-resisting varnishes, paints, and enamels and in the manufacture of oilcloth and linoleum.

The tree from which tung oil is derived is also known as the china-wood oil tree. In appearance it is not unlike the catalpa. It grows rapidly, but does not usually live to a ripe old age. Flourishing on the waste hillsides of the Yangtze Valley, the tung-oil trees present a lovely picture in the early month of spring. They are covered with clusters of white and pink blossoms, which are superseded by green and reddish fruits, the seeds of which supply the queer china-wood oil of commerce.

Primitive as are the methods of the Chinese varnish collector, they cannot hold a candle to those used by the Chinese farmer in collecting his tung oil. He parches the seeds over an open fire, breaks them to bits between flat stones, and finally expresses their oil in the crudest sort of a wooden hand-press. He then transports the oil, not infrequently by human carrier, to the port of Hankow. In this "efficient" manner the world is supplied with industrial quantities of one of its valued drying oils.

Courtesy of the Antoine Chiris Company

A SCENE IN SOUTHERN FRANCE, WHERE THE WOMEN OF THE PROVINCES GATHER VIOLETS UNDER THE SHADE OF ONE OF THE MOST FAMOUS AND USEFUL OIL PRODUCERS OF HISTORY, THE OLIVE TREES

The technologist distinguishes between two great classes of oils that occur in nature; the so-called *fixed*, or *fatty*, oils, and the *volatile*, or *essential*, oils. These terms are descriptive rather than scientific and they require amplification. Fatty oils do not evaporate on exposure to air. They are not volatile. All of them, when treated with alkali under the right conditions, give the valuable substance glycerine (which plays such a rôle in explosives production) and a mixture of soaps. On the other hand, the essential oils are all more or less volatile. They all have pronounced and characteristic odors and they do not yield glycerine. To give concrete examples: olive oil is a typical fatty oil, while oil of turpentine is an equally important essential oil. Both are liquids and both are well-known articles of commerce, but there the similarity ends.

Tung oil is also a "fixed" oil, but it is strangely different from olive oil. If the latter is spread in a thin film on glass, it will remain liquid and oily indefinitely. If tung oil is similarly treated, it will rapidly "dry" to form a thin, rather opaque, white film. There are any number of common oils that behave like olive oil, and these the chemist has termed the non-drying oils; and then there are a number of oils supplied by seeds of trees and shrubs all over the world which form solid films and are known as "drying oils." In between is a group of tree oils known as "semi-drying" oils.

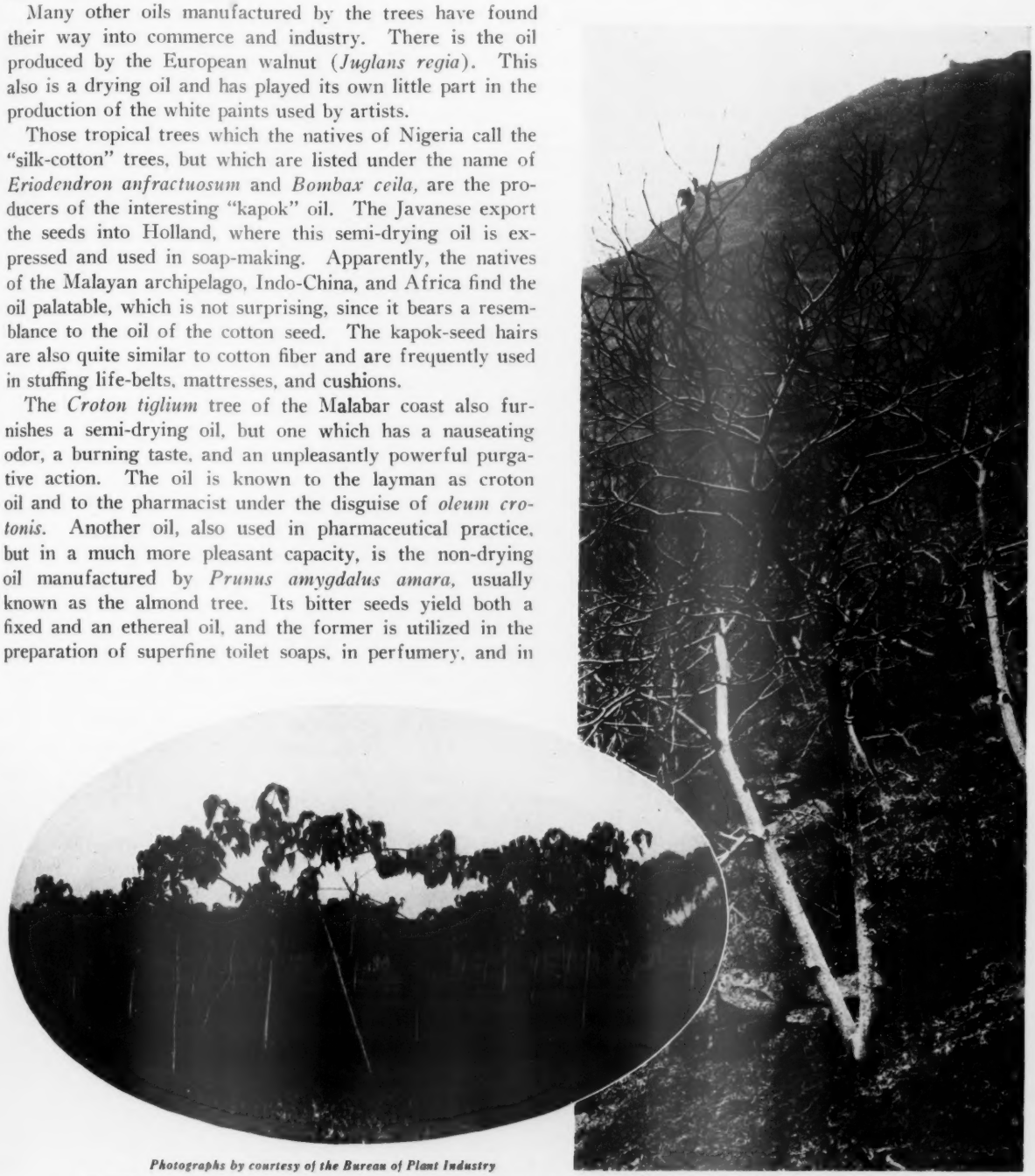
A number of the drying oils are used in paint and varnish production, and the leader of these is certainly the common linseed oil. Nevertheless, tung oil of China is making itself felt in American industry, and at the instigation of the Federal Department of Agriculture sporadic attempts have been made to cultivate the tung-oil tree on the waste lands of the southern United States.

Many other oils manufactured by the trees have found their way into commerce and industry. There is the oil produced by the European walnut (*Juglans regia*). This also is a drying oil and has played its own little part in the production of the white paints used by artists.

Those tropical trees which the natives of Nigeria call the "silk-cotton" trees, but which are listed under the name of *Eriodendron anfractuosum* and *Bombax ceila*, are the producers of the interesting "kapok" oil. The Javanese export the seeds into Holland, where this semi-drying oil is expressed and used in soap-making. Apparently, the natives of the Malayan archipelago, Indo-China, and Africa find the oil palatable, which is not surprising, since it bears a resemblance to the oil of the cotton seed. The kapok-seed hairs are also quite similar to cotton fiber and are frequently used in stuffing life-belts, mattresses, and cushions.

The *Croton tiglium* tree of the Malabar coast also furnishes a semi-drying oil, but one which has a nauseating odor, a burning taste, and an unpleasantly powerful purgative action. The oil is known to the layman as croton oil and to the pharmacist under the disguise of *oleum crotonis*. Another oil, also used in pharmaceutical practice, but in a much more pleasant capacity, is the non-drying oil manufactured by *Prunus amygdalus amara*, usually known as the almond tree. Its bitter seeds yield both a fixed and an ethereal oil, and the former is utilized in the preparation of superfine toilet soaps, in perfumery, and in the beautifying lotions which come to milady's dressing table.

One of the beautiful ornamental trees of Japan, prized because of its lovely flowers, is the manufacturer of an oily aristocrat. This is the *Thea japonica*, with its "tsubaki oil." The seeds of the tree, dried in sun-



Photographs by courtesy of the Bureau of Plant Industry

AT THE RIGHT ARE SHOWN TUNG-OIL TREES IN THEIR NATURAL HABITAT ON THE ROCKY HILLS OF CHINA. IN THE DAYS OF THE EMPEROR KIEN LUNG THEIR CHEAP OILY PRODUCT WAS USED TO ADULTERATE EXPENSIVE VARNISH OILS, WHICH WERE SOLD TO THE "FOREIGN DEVILS" AT A SPLENDID PROFIT. THE OVAL INSET SHOWS WOOD-OIL TREES PLANTED IN OUR OWN SOUTHLAND, AND THE SUGGESTION HAS BEEN MADE OF UTILIZING IN THIS WAY MANY ACRES OF CUT-OVER LANDS BY PLANTING THEM TO WOOD-OIL TREES TO SERVE THE PAINT AND LINOLEUM PRODUCERS. THESE THREE-YEAR-OLDERS ARE THRIVING

light, crushed, steamed, and pressed in the wooden-wedge press (the "tatsugi") of Japan, have the distinction of yielding the most expensive fixed oil of the Island Empire. In the Idzu Isles it is used as a foodstuff, but in general it finds application as a hair oil and as a highly prized lubricant. Lubrication of delicate machinery is also the chief use of the non-drying oil of the European hazelnut (*Corylus avellana*), which resembles almond oil in many of its characteristics.

More attention must be given to the vast output of the olive tree, an early emigrant from western Asia into Europe, where it became a naturalized citizen many centuries ago. More recently its progeny have wandered into South Africa, California, and Australia.

The "meat" surrounding the pit of an olive may contain well over 40 per cent of oil, and the most delicate salad oil is obtained by removing the kernel and expressing the crushed marc of the hand-picked fruit. The technologist is not satisfied with a single pressing, however. He mixes the olive pulp with water and uses the press again. This operation also gives him an edible oil, but one not so well suited to the sensitive palate of the gourmet. After that the producer treats the crushed olive with hot water and presses again and again. As a result, he obtains a liquid used in soapmaking, as a lubricant, in medicine, in the production of artificial leather, and to a limited extent as a burning oil.

Early in the 20th century the production of olive oil in the countries bordering the Mediterranean reached the enormous (mean) annual figure of 800 thousand tons. It is one of the finest table oils known to man, and its qualities as a foodstuff depend in no small measure on its taste, its limpidity, and its color. While a large number of olive trees have been cultivated in California, it is claimed that their oil is not as well suited for edible purposes as are the oils of Europe.

Another outstanding oil of commerce originates with the palm tree (*Elæis guineensis*) which grows in the bushlands on the western coast of Africa. Vast forests of these oil producers extend from St. Paul de Loanda to Gambia and their output is surprising. They store their oily product in the fleshy parts of their fruits, and the crops continue steadily for forty or fifty years. Natives gather the fruit at least twice a year—sometimes oftener—and their methods of preparing the oil are startlingly primitive.

Picture the entire population of a village in Dahomey going out to harvest the ripening fruit. The men climb the trees and with their cutlasses dissect out huge clusters, each weighing thirty or forty pounds. These great masses of fruit crash from their heights and in the course of a few days are picked over by the women and children, who remove the individual fruits and throw them into holes in the ground. Then they wet them, cover them over with banana leaves, and permit them to soften up. Actually, this is a fermentation process which may take several weeks or several months. All this is done so that the villager can remove the palm nut more readily from the fleshy parts of the fruits, which are then beaten to a pulp. The oil, with its pleasant violet-like odor, which is either squeezed or drained out of this pulp, represents the very highest grade of native manufacture. Other grades are also obtained by heating the remaining pulp with water and skimming off the floating layers of oil. Statisticians have shown that, with all their efforts, the most conservative African villagers lose at least two-thirds of the palm oil originally present in the fruit. The introduction of newfangled devices does not meet with the general approval of the African; hence another one of the great commodities of Western civilization (used in the candle and soap industries, in the tinplate industry, as well as in the laboratories of the pharmacist) is the product of manual labor from start to finish.

Many tree oils which may or may not be exported to the countries of Europe enjoy a local reputation in the tropical regions in which they are produced. Thus "calophyllum oil," prepared from the nuts of the tree that has given it its name, is prized by the natives of tropical Asia and East Africa in the treatment of rheumatism. "Ben" oil, formed by the various species of the moringa tree (nicknamed the "horseradish" tree because of its queer edible root), is used in the East Indies as a cosmetic and in the preparation of perfumes. Pongam oil, derived from the beans of the tall pongam trees, which grow so prolifically on the Malayan Archipelago and in northern Australia, is used by the natives in their medicinal preparations and for illuminating purposes.

Cacao (or cocoa) butter, expressed from the seeds of the cacao tree (*Theobroma cacao*) has an odor like chocolate and is an important by-product in the manufacture of cocoa. It is employed in making confectionery and chocolates, in the preparation of perfumes and in the prevention of chapped lips. It must not be confused with cocoanut oil, the semi-solid substance found in the kernels of the cocoanut palms (*Cocos nucifera* and *butyracea*) which cover the millions of acres of dense forests in Ceylon, Java, the South Sea Islands and South America.

Those of us who recall the lure of Stevenson's "Island Nights" must remember his tales of the *copra*, for which venturesome and unscrupulous traders fought and died. It is from this copra, the sun-dried kernel of the cocoanut, that the oil is drawn, and it is this edible oil that is imported so largely into Europe and America. The oil also plays a rôle in the production of marine soaps.

Chaulmoogra oil, also in reality a butter, has had recent (and well-deserved) publicity because of its use in the treatment of leprosy and skin diseases. It is the product of trees indigenous to Burma and Assam.

The foregoing are only a limited number of the oily products manufactured by those efficiently conducted chemical factories known as the tropical forests. Would that man could collect their products as readily as the forests produce them! Would that the chemical engineer could emulate the growing tree in utilizing the energy imported from the sun, the products obtained from the soil and from the air, and change them—without bustle or excitement, without struggle between capital and labor, without the use of intricate machinery—into foodstuffs, medicines, detergents, cosmetics, varnishes, paints, and fuels, in the interest of mankind!

"Venerable Woods"

THREE years ago we followed this same trail.
How cool it was; the pines rose straight and tall
Until they touched the sky; their waving tops
We could not see, but only hear, as they
Talked with the wind. Long vistas opened—trees,
And yet more trees, on every side—hemlocks
And spruces, too. The sky was hid, but here
And there a patch of gold came down to teach
Some youthful pine or balsam how to grow
Up straight and tall and be a credit to
Those who had gone before. The ground was soft
And springy, with a pungent tang which made
Us want to stop and sniff at every step.
The light was soothing, green and dim. Why, we
Could tramp for days on trails like this. See, there
A rabbit hops across the path. A brook
Runs races with the trail. Last night some deer
Drank here—a fawn, a doe, two bucks; their marks
Are plainly seen in the sweet-smelling muck.
The ferns are quite crushed down. The water's clear
And cold. At last we reach the pond—"Dog Pond"
It's called, because there were so many wolves
Long years ago. The trail ends in a grove
Of feath'ry tamaracks. Spruces and pines
Come gaily trooping down in files as near
The water as they dare. Across the pond
A red fox skulks along, waving his brush;
A trout flops lazily, and all is still
And calm.

Today we tramp along the selfsame trail.
Nelt plods ahead. The coffee-pot and pan
Make an infernal din each step he takes.
The sun beats down; it is so close and hot
We scarce can breathe. The raspberry bushes
Are clutching at us as we pass; they rip
Along our sides and scratch our hands. A few
Black trunks rise here and there, like fingers from
The hand of some martyr who has been burned
To death for crime he knew not of. They gleam
Like evil eyes beneath the sun and smell
Bitter, acrid. The sky is pressing close,
As if it wished to blot this horror out.
The ground is hard, with roots to catch our feet.
A stretch of corduroy comes now, worse than
The trail to walk. The air is dead. We wish
To rest on every stone we see. The brook,
Of course, is dry; only a pool remains—
Turgid, thick, vile—to breed mosquitoes where
Once deer drank deep. What's happened? Why, you see,
Two years ago they lumbered this whole tract.
They took them all, from pines who gravely saw
Our fathers land at Plymouth down to trees
So small they scarce could reach your finger's span—
Perhaps nineteen years old. They left the slash
Around. Of course, it burned; it always does when they
Have cut the trees. We reach the pond. The camp
Is seen across the lake. Some men are there,
For now McMann is cutting a new tract.
The pond has shrunk; it seems to wince beneath
Our gaze. Some orange peels and bright tin cans
Bob on the waves; more cans and bottles strew
The shore. The trout? Oh! they are dead; the men
Used sticks of dynamite to save the time
It took to catch them with a fly. The trees
Come back? Why, no; they never can; at least
Not pine and spruce. Wild cherry, birch, and beech
In ninety years, perhaps; but when they cut and burn
The virgin forest, then it goes for good.
Men mess all things. Why can't they leave some woods?

—Lois Dwight Cole.

Bears in Camp

[*Continued from page 293*]

"their rugs," as they entered camp for a ration of food. Several outside sportsmen, hearing of the plentitude of bears on Cedar Creek, staged hunting parties. The baying of airdales gave notice that some of the bears who had taken to the refuge of the hills and woods would not be fed by the hand of man again. Reports were circulated that Brownie's "rug", too, was in a collection.

Winter came, one of much snow, and with the spring's opening of Cedar Creek valley the writer made a visit to the old camps, which were unoccupied now by a regular camp force, but which were used by a crew of four men employed by the Forest Service for brush disposal. These men, too, had witnessed during the previous summer the friendliness of the bears and they wondered if those that had not been killed would return to their "free lunch" stand.

One rainy day, as the men were gathered about the cabin's stove, a door was pushed open and a bear's grown head appeared—Brownie had returned. He had lived through the winter's arduous season to return to a summer's well-fed protection.

A closed season on bear had been put into effect several years before and during that time ravages by bear were not as numerous among the stock of the sheepmen in the vicinity of the camp. Now, however, the season for killing bear is open year round; so a word to the remaining bears of Cedar Creek:

"Be particular of the man friends you make, and remember, honeyed bread holds not the safety of huckleberries, brush-gathered."

To preserve wild animals implies generally the creation of a forest for them to dwell in; so it is with man.
—*Thoreau.*

LUMBER FACTS

More than four-fifths of all American homes are Lumber-Built—a substantial proof of the economy and lasting satisfaction of good lumber construction.

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A Chance for Reforestation

[*Continued from page 300*]

accordingly, be very unwise to put in either of these in any very great numbers until they had been thoroughly tried out on a small scale.

It is evident that this devastated region offers an exceptional opportunity for the inauguration of experimental reforestation work. It is rarely that we find in the Southern Appalachian region such complete denudation as that occurring in the vicinity of these copper smelters in and around Ducktown. But, judging from the customarily rapid reclothing with forest of other areas and the conditions observed here, it is probable that efforts along such lines would be amply repaid by the relatively prompt return of these lands to a timber-producing status. Erosion does not thrive on forested watersheds. It is certainly worth a trial. Those gaunt tree skeletons are pleading with us. That tortured soil is looking to us for help.

Laying the Specter of Unconstitutionality

[*Continued from page 281*]

nomic disaster. Purchase of lands by the Federal Government for forestry purposes is one of its recommendations. Voluminous arguments may be advanced for and against the constitutionality of such a law; but, viewing the problem in a broad way, it seems almost to answer itself affirmatively; for if it is constitutional for Congress to appropriate $10,000,000 to buy food for the people of Germany—as the House did a few days ago, almost without question—or to appropriate $100,000,000 for relief of suffering nations in Europe, surely it is constitutional for it to appropriate the much more modest sums needed to provide our own people with wood for fuel, shelter, and industry, and needed also for the "common defense and general welfare."

FOREST PEOPLE

[*Continued from page 287*]

The story of the Russ family is really the story of all the West—indeed, of all America—for it is the story of the swarming migration from many lands that pushed forward across the plains, carrying our frontier westward, blindly but bravely seeking the fulfillment of their unknown destinies, and it is fitting that this evergreen memorial shall stand, a monument dedicated to the heroic spirit of the pioneers of California.

Ten years after the birth of Mr. Russ in a little Maine hamlet, Zipporah Patrick was born in Wyoming County, Pennsylvania, in 1835. In 1843 her father and mother removed to Illinois, locating in Whiteside County, in the northern part of the state, near Rock River and about eighteen miles from the Mississippi. This part of Illinois was then a veritable wilderness; but the lure of the farther wilderness by the Pacific, when the discovery of gold in California thrilled the world, inspired the departure of the Patrick family, and they set out overland by wagon in May, 1852, for California, arriving at Sacramento on October 15 of the same year.

In 1854 Zipporah Patrick married Joseph Russ and founded a new family in California. Now, after almost seventy years, the widow donates from the joint pioneer estate to the people of California a great redwood grove, which, in conjunction with other memorial groves, the State Redwood Park, the Redwoods flanking the "Highway of the Giants," and the proposed National Redwood Park, will be a majestic memorial not only to the early men and women of California, but will preserve forever some worthy remnants of the oldest trees in the world, the Sequoias of California.

Mrs. Russ's gift is one of a number that are substantially enlarging the acreage of the State Redwood Forest, in Humboldt County, on the acquirement of which the State of California is spending $300,000. Other redwood groves have been and are being acquired by gift from lumbermen and timber-owners and by purchase through the Save the Redwoods League (which initiated and is conducting the successful campaign for the preservation of a part of the ancient forests) throughout the redwoods belt, from Monterey on the south to the Oregon line, 420 miles to the north.

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(-)

Wanted—A Department of Conservation

[*Continued from page 260*]

which they are working. It is not the personnel that compose the bureaus that is at fault so much as the system and policies under which they work. A reorganization of departments, therefore, should be based on principles, without regard to the personnel. To arrive at such principles is not an easy task. Every department requires the services of lawyers; but their work is incidental to the chief purpose of all the departments, except that of the Attorney General. Most of the departments employ engineers, but engineering is not the chief function of any of the departments. Practically all of the professions are utilized to some extent by the government; but, with the exception of the law, to establish departments by professions would be impracticable. Any reorganization must, therefore, be based on broad lines, such as Public Defense, Agriculture, Commerce, Public Welfare, and the like. On this basis it would seem that the natural resources, which represent so much of the basic wealth of the country, should be of sufficient importance to justify the creation of a special department of the Federal Government for their management and conservation.

Our natural resources are so interdependent that to place part of them in one department and part in another requires duplication of administrative units. Without forests, for example, we cannot have water for power and irrigation. Without forests we cannot have game. Even the mining of coal and other minerals are dependent on wood. Therefore we cannot establish constructive policies in the development of the forests without giving due consideration to related resources. As it is today, these resources are so scattered among departments that it is not possible to focus public attention on them as a unit. Areas of the same type may be under totally different policies. Bureaus managing related activities in different departments are often unable to co-operate to the best interests of the public or of the bureaus themselves. Legislation affecting such areas is delayed, due to bickerings and differences of policies between the interested departments. Place such related resources in the same department, and these differences either will not develop or they will be readily adjusted. Each department head is naturally inclined to support his bureau, resulting in suspicions and petty controversies between departments, with accompanying friction and inefficiency.

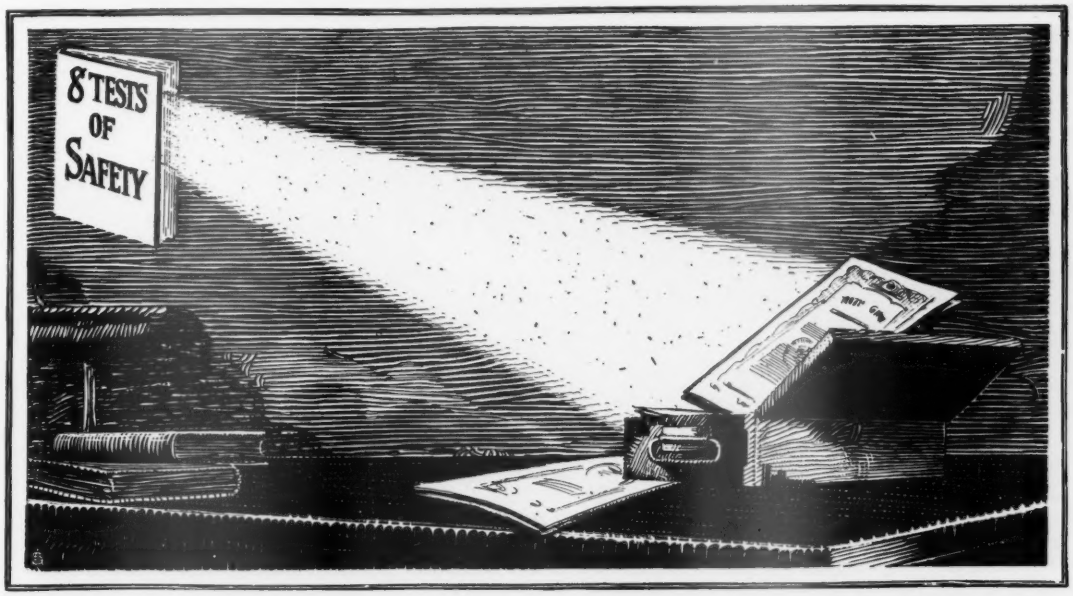
It has been said that we should have at the head of each department a man trained for that work. This ideal can hardly be reached while our present political system is in effect. What is vastly more important is that each department shall be so organized as to cover completely the field which it is intended to serve, and that a well-defined policy for each of its major functions shall be established. These policies should be so fixed in the public mind that they could not be changed over night by the victors in any political campaign. "To the victor belongs the spoils" must no longer apply to our natural resources.

But, supposing the people demand that their natural resources still in public ownership shall be co-ordinated under the control of one department, what shall be the proper policy to adopt in the management of them? In an early statement of policy concerning the National Forests occurs this phrase: "They shall be managed for the greatest good of the greatest number." It would be difficult to find a more compact or comprehensive definition of practical conservation. Time itself cannot alter it. Public necessity may from time to time require modifications of any specific policy adopted now for a given area or resource, but the general principle still holds. It is obvious that future generations are to be taken into account. It is plain that certain areas, like our National Parks, contain objects and resources that must be completely preserved from commercialism for all time, if the greatest number are to be benefited.

It is equally clear that other resources which cannot be reproduced or replaced must be used sparingly by the present owners in order to spread their benefits to successive generations. On the other hand, those resources like the forests, the game, and the fish, which can be reproduced by the aid of man, should be used by any generation only when the generation has made provision for an ample supply for its immediate successors. There are still other resources, like water powers, that should be developed as rapidly and as intensively as the economic demands justify. Conservation means proper use; but what seems to be proper use of a resource today may appear far from wise a century hence; therefore our policies must be sufficiently flexible to meet the ever-changing economic needs of the nation. In each and every case, however, the policy adopted toward any resource should and must be in harmony with a general policy which includes *all* of the natural resources, if the greatest good of the greatest number is to result. This can be done only through the consolidation of all these resources under one general head.

We realize that it is customary when persons interested in a particular field of governmental work become dissatisfied with the manner in which it is administered for them to demand a separate department of the government to deal exclusively with that activity. There has been a demand from the engineers for a Department of Public Works; educators insist on a Department of Education; social workers have called for a Department of Public Welfare, and the latest addition is the proposed Department of Fine Arts. Obviously, it is not practicable to create a separate department for every activity of the government. To do so would mean the creation of a new sort of Congress in the President's Cabinet. However, the widespread dissatisfaction with so many governmental agencies led President Harding to propose a reorganization of departments and to have studies made with that end in view. It seems likely that the present eruption will crystallize this dissatisfaction into a political issue of the first order. The men and women who believe in the

[*Continued on page 314*]



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AROUND THE STATES

FOREST POLICY LEGISLATION PROGRESSING

Hearings on the McNary-Clarke Bill, designed to establish the beginning of a concrete forest policy for the nation, were completed by the House Committee on Agriculture late in March, and by unanimous vote of the committee the bill was later favorably reported to the House. A number of minor amendments to the bill were made by the House committee. One of these would limit the educational work done under section 5 of the bill to woodlots or reforestation projects in farm ownership, thus excluding any land suitable chiefly for timber production. Another minor amendment provides that in the purchase of lands under the Weeks Law the Geological Survey may be called upon by the Forest Service to pass upon projects involving stream-flow problems.

As this issue goes to press, the situation with respect to the passage of the bill by Congress appears very favorable. In the hearings, both before the Senate and House committees, no opposition to the measure developed. It is believed by those in close touch that if the bill can be brought to a vote in the House it is certain of passing. In the event that this has not been accomplished by the time this issue appears, every effort should be made by both individuals and organizations interested in forest problems to have their representatives in Congress do all they can to bring the bill to a vote.

SECRETARY RECOMMENDS WITHDRAWAL OF MUIR GLACIER

Commenting on the article by Mr. Cooper, entitled "The Battle of Ice and Forest," which appeared in the last number of AMERICAN FORESTS AND FOREST LIFE, calling attention to the desirability of having the Muir Glacier declared a national monument, Hubert Work, Secretary of the Interior, under date of April 4, wrote the Association as follows:

"I am very much interested in the proposal to establish a national monument at Glacier Bay and have given instructions that a study be made of the area. In the meantime I have recommended the temporary withdrawal of the land from disposition."

WEST VIRGINIA BUYS FIRST STATE FOREST

On January 4 the Game and Fish Commission of West Virginia, with the consent of the Governor, purchased the first State Forest—a tract of about 10,500 acres, lying on the east side of the Greenbrier River, in Pocahontas County. The area is well covered with good second-growth hardwoods, mixed with white pine and hemlock. A steel observatory will be erected during the coming summer overlooking the forest, so as to safeguard it from fire. It will be maintained also as a game refuge, and a permanent employee will be on the ground throughout the year. This is the first state-owned forest.

NEW YORK WOMEN PLAN FEDERATION FOREST

The New York State Federation of Women's Clubs is planning to plant a Federation forest of 100 acres, the work to be done under the auspices of the federated clubs as an evidence of their interest in the reforesting movement.

The first week in April, which was set apart as Conservation Week by Governor Smith in a proclamation, was very generally observed throughout the state. Lectures and addresses were given in schools and before agricultural, commercial, and other bodies, and special Conservation Week exercises were held by farm bureaus in many counties for the purpose of educating farmers and land-owners generally in a more intelligent use of their forests and woodlots. Nearly 600,000 trees will be planted in demonstration forests on farms in all sections of the state to acquaint land-owners in the vicinity with the advantages of putting land that is idle and non-productive to profitable use by planting forests on it.

The New York State Conservation Commission is making an extensive series of experiments for working out better and more economic methods of propagating Carolina poplar in the state's nurseries. Preliminary experiments begun in January in the Albany office of the commission have already shown that the cuttings one year old rooted most readily, and of these nearly 100 per cent rooted in less than six weeks, many of them having shoots 10 to 18 inches in length. The Carolina poplar is a rapidly growing tree and its wood can be used for fuel, lumber, packing boxes, excelsior, crates, berry boxes, and pulp.

A CURIOUS NATURAL GRAFT

By JOHN T. BARTLETT

Curious results followed when a branch of one piñon pine, constantly rubbing against the trunk of a second piñon pine, became grafted to the latter. The natural graft occurred in the Mesa Verde National Park and was observed by Forest Service men and photographed.

THE GRAFTED PINE IN THE MESA VERDE

© The D. T. E. Co., Inc., 1924

Reproduction from a painting of the estate of Wm. H. Vanderbilt, Newport, R.I., by Sigurd Skou

Your trees may be suffering from the unfavorable conditions of last year

THE long and excessively dry period of last summer did serious damage to many trees. Some of your trees may have dropped their leaves prematurely; on others the leaves may have turned brown and curled up. Some trees started to die back at the top; on many others the leaves turned to a sickly yellow—indicating a reduced vitality.

The heavy freezing in the late spring of 1923 killed many trees outright; on many others it sprung the bark and left open wounds to decay. In still other cases the tender growing tissues were injured and the growth stunted.

The tree is a living thing—it is just a big plant. Its food must be taken largely from the soil; it requires above everything abundant water. Anything which injures a tree sufficiently to reduce its vitality makes it much more susceptible to disease. Ill health in trees is just as dangerous as it is in every other form of life—it is very often a mere preliminary to death.

Davey Tree Surgeons are very much more than mechanical experts; they are trained in the science of tree life. Some trees are too far gone to be saved, but countless thousands of valuable trees can be saved by these master Tree Surgeons—if not neglected until it is too late.

Let Davey Tree Surgeons examine your trees carefully without cost or obligation on your part. Davey Tree Surgeons live and work regularly in your vicinity—any place between Boston and Kansas City, or in California. Write or wire nearest office.

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The limb forming the graft passes through the second piñon pine and out beyond, where it dwindles to small size. The grafted tree has benefited in extraordinary fashion from the graft, as above it attained a size of trunk markedly in excess of that below. On the other hand, the trunk of the first piñon pine, above the branch forming the graft, is small and stunted. In effect, above the grafting limb, two trees nourish the trunk and limb development of one. The piñon pines thus naturally grafted are over a hundred years old.

A NEW FOREST FOR NEW JERSEY

The legislature, just adjourned, accepted from Mr. Adolph E. Borie, of Hacklebarney, his offer to give to the state a 32-acre park. This area, now under the jurisdiction of the State Forester as the Hacklebarney State Forest Park, is in a peculiarly beautiful setting. It is in a natural gorge on the Black River, a tributary of the Raritan River. The location and its natural surroundings are unusually wild and unspoiled for this section of the country. The natural forest cover still remains on the entire area and it is easily accessible to the motor-traveling public. As its location and attractions become known, it will undoubtedly become one of the favorite objectives for hikers, tourists, and picnickers, besides offering sport to the fresh-water angler.

ISLAND "DUDE RANCH"

A new resort is being opened on Wild Horse Island, in Flathead Lake. The island, which rises from the depths of the lake, is a miniature mountain containing 4,000 acres. It is quite heavily forested and has many beautiful beaches, bays, and inlets. The proprietor, in advertising the resort, features the fact that it is surrounded by vast National Forests and mentions also the National Parks and the Flathead Indian Reservation.

The number of resorts and "dude ranches" in Montana is increasing rapidly. These resorts, when situated in or near the National Forests, serve to interest people in forestry from all over the country.

CAMERA CONTEST

The Lehigh Coal and Navigation Company, through its Forestry Department, has inaugurated a unique contest to create an interest among the public and school children in the prevention of forest fires on their own and adjoining forest lands. This contest is open to the general public and $150.00 in cash prizes will be given for the best camera pictures that point out the value or need for the prevention of forest fires, made by the residents of the territory from East Mauch Chunk to Pottsville. $25 in cash will be given for the best picture which, with its name, slogan or title shows clearly the results of burning up valuable tree growth or the good results obtained by keeping fires out of the woods. The second prize is $15 in cash and the third, $10. The Company is to be commended for this fine work in the interest of forest conservation, for it tends to acquaint people better with local forest conditions and to impress upon them the necessity of care with fire in the woods.

REMARKABLE "CHIMNEY ROCK"

By Guy Elliott Mitchell

Chimney Rock, in Cheyenne County, Wyoming, is one of the most perfect and striking natural rock spires in the world. Even without the topmost pinnacle, this rock would be a striking landmark, rising as it does some 300 feet above the surrounding land; but with this added 150-foot shaft, Chimney Rock is a remarkable-looking formation. The several bases and the rock itself are a series of sandstone and

clay strata, showing that at some distant age this part of the United States, now thousands of feet above sea-level, was the bed of an ocean. According to Geologist N. H. Darton, of the United States Geological Survey, in one of the early geologic ages the whole of Wyoming and other adjoining states was traversed by rivers which deposited a thick body of sand clay. Later the land was uplifted, and finally much of it washed and eroded away. Chimney Rock, somewhat harder than the surrounding mass of sediments, is one of the last remaining fragments of a great capping which, following the continental uplift, covered this portion of the country.

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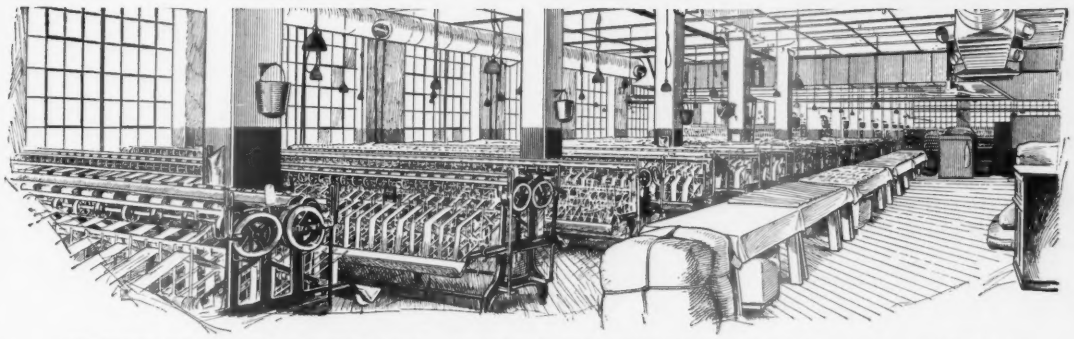

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A message to Business Men about Weyerhaeuser-Ideal Industrial Construction

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In the main, progress has probably made for higher production and lower costs.

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NO type of factory building has ever been found so economical, dollar for dollar, as the "Mill Construction" which was the standard of American industry up to 1900.

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Save up to 15% on interest charges, with a corresponding saving in taxes.

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Nor would Weyerhaeuser be understood as urging the indiscriminate use of "Mill Construction."

In fact, one of the functions of the Weyerhaeuser Expert Construction Engineer is to advise *against* the use of "Mill Construction" when it is not suited to the purpose of the building.

As part of its program of service to American industry, Weyerhaeuser has made the most authoritative study of this type of building in recent years—and perhaps ever.

Capital investment—taxes—interest charges—depreciation—design—structural efficiency—flexibility of interior division—fire safety—insurance rates—and many more things.

Furthermore, since "Mill Construction" depends first of all on adequate supply of great fine timbers, Weyerhaeuser supplemented the above investigation by a survey of its timber resources and distributing facilities in relation to "Mill Construction" needs.

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Responsible members of industrial concerns are also invited to send for complimentary copies of the Weyerhaeuser books—"Industrial Buildings," written for the Business Man, and "Structural Timbers of Douglas Fir," a book for the Building Engineer, Architect, and Purchasing Agent.

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ATTENTION, FORESTERS!

AMERICAN FORESTS AND FOREST LIFE will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters.

POSITIONS WANTED

EX-SERVICE MAN, from 11th Co., 20th Engineers, A. E. F., heretofore unable to work because of ill health, now wishes to return to woods work. Experienced woodsman, with good references. Address Box 7020, care AMERICAN FORESTS AND FOREST LIFE, Washington, D. C. (2-4-24)

POSITION WANTED by man 70 years of age, in good health and active, single. Would assume the responsibility of the care of an estate, or game preserve, a friend of animals and birds. Lifelong practical experience in farming in So. E. Penna., 20 years' connection with a large nursery, expert knowledge of selecting and practical planting and care of pecan, English walnut, fruit, shade and ornamental trees, shrubbery, small fruits, flowers, vegetables, &c. Practical pruning a specialty, two winters spent in Florida pruning orange trees. Prefer location in East or South. Would consider an offer on a salary or share basis, if possible a personal interview requested. Satisfactory reference furnished. Address Box 7040, care AMERICAN FORESTS AND FOREST LIFE, Washington, D. C. (2-4-24)

TECHNICALLY TRAINED FORESTER, at present employed, desires to change his position. Has had several years' practical experience in all phases of forest work. Would like to correspond with any person, corporation, or municipality desiring to employ such a man. Address Box 7045, care of AMERICAN FORESTS AND FOREST LIFE, Washington, D. C. (3-5-24)

GRADUATE FORESTER—B. S. in Forestry 1910, with thirteen years of experience in both field and office work in forestry and forest engineering. Would like opportunity of organizing a forestry or forest engineering department for a pulp or mill concern. Best of references furnished. Address Box 7050, care of AMERICAN FORESTS AND FOREST LIFE, Washington, D. C. (4-6-24)

YOUNG MECHANICAL ENGINEER would like, for change and recreation, any kind of work in the woods for the summer season. Salary of less importance than good company. Address Box 7055, care of AMERICAN FORESTS AND FOREST LIFE, Washington, D. C. (4-6-24)

GRADUATE FORESTER, B. S., M. S. F., Michigan University, 11 years' experience with U. S. Forest Service in California, Idaho, and Montana; one year railroad location and construction work; wishes position with lumber company or state service as forester or logging engineer. References furnished if desired. Address Box 7060, care AMERICAN FORESTS AND FOREST LIFE, Washington, D. C. (5-7-24)

FORESTER-LAWYER, studied at two forest schools and law-school graduate. Studied commerce one year at university. At present engaged in graduate study of economics as related to forestry at an eastern university. Desires to locate with a forest-products concern where a knowledge of both law and forestry will be useful. Interview desired. Available June 15th. Address Box 7065, care AMERICAN FORESTS AND FOREST LIFE, Washington, D. C. (5-7-24)

HELP WANTED

POSITION OPEN.—Position to offer young man made of good goods, who is willing to work from bottom up to member of firm in nursery doing general retail and landscape business in Davenport, Iowa; Rock Island and Moline, Illinois, and vicinity. Must be clean, keen, energetic, even-tempered, and a sticker. Some knowledge of nursery work preferred. Address Box 7075, care of AMERICAN FORESTS AND FOREST LIFE, Washington, D. C. (4-6-24)

A NATURALLY GRAFTED WHITE PINE

By E. A. ZIEGLER

Adjoining the Pennsylvania State Forest School at Mont Alto there is found a naturally grafted white-pine tree of great interest to nature students and particularly plant physiologists. Apparently, this tree consisted of two forks joining near the ground, which by rubbing at several points exposed the cambium and formed several adhesions which have developed into natural grafts. Some wood-cutter cut off the one fork without observing the union above. Observing the graft, he left the other stem intact. Both stems have continued to grow, the rooted stem increasing more rapidly below the grafts, but strangely enough the top of the fork with the severed stem has the larger crown. This cannot be observed in the photograph. At present the former point of union on stem No. 1 is so well healed over that it is a very strange sight to see the suspended stem hanging in mid air with no visible point of connection and no stump.

Photograph by F. W. Horich

LEFT "UP IN THE AIR," BUT STILL ON THE JOB

The severed stem is laying on annual rings of wood right down to the severed surface, showing conclusively that sap does not "go up in spring and down in fall" only, but that there is an all-summer circulation up and down. It is clear that the solvent that carries the elements of wood tissue down into the severed stem to produce spring wood and summer wood must rise again to leave this stem, as there is no outlet below.

Wanted—A Department of Conservation

[*Continued from page* 308]

conservation of our natural resources—and they are vastly in the majority—have a right to demand, through their representatives in Congress, that the dissipation and mismanagement of this valuable public property shall cease. Is it not time that this large group of voters was making itself heard in no uncertain terms? Theirs is not a selfish motive. Their demands are for the best interest of all the people, and they should be heard. Let us put all of our natural resources in one basket and then watch the basket.

REDWOODS LEAGUE SAVES ANOTHER GROVE

Announcement has just been made by Dr. John C. Merriam, president of the Carnegie Institution of Washington and head of the Save the Redwoods League, that through the generosity of a resident of Massachusetts another splendid grove of California redwoods, or *Sequoia sempervirens*, has been preserved. The tract is in the heart of the Humboldt State Redwood Park, about 45 miles south of Eureka, California. It comprises 113 acres and contains some of the largest redwood trees of this region, many of these giants being from 10 to 15 feet in diameter and from 200 to 300 feet in height. There are several ideal camping spots in this grove, which is located on the banks of the South Fork of the Eel River.

The citizen who furnished the funds that made possible the saving of this grove refused to have his identity made known, asking that he be designated simply as "a resident of Massachusetts." After purchasing this tract the Save the Redwoods League immediately deeded it to the State of California, to be held for all time as a public park.

CARRYING REDWOOD NORTHWARD

A very interesting series of experiments is being initiated this spring by the Merrill & Ring Lumber Company of Seattle, Washington, on its lands on the Olympic peninsula. These experiments are a part of the reforestation studies which were started by the company last summer, the purpose of which is to determine just what the permanent forest management possibilities of the properties are. Perhaps the most interesting experiment of the number which will be started is the first large field planting of redwoods in the North. A number of redwood seedlings have been secured from the private nursery of the Union Lumber Company, Fort Bragg, California. These seedlings will be transported to the property and planted. The aim is to determine, if possible,

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FOR SALE

LOCATION AND AMOUNT.—All the merchantable dead timber standing or down and all the live timber marked or designated for cutting on an area embracing about 1,100 acres in Sections 16, 20, 21, 22, 28, 29, 30, and 31, T. 9 S., R. 6 E., W. M., Breitenbush River watershed, Santiam National Forest, Oregon, estimated to be 77,500,000 feet, B. M., more or less, of Douglas fir, western hemlock, western red cedar, sugar pine, western white pine, and other species of timber, approximately 73 per cent Douglas fir.

STUMPAGE PRICES.—Lowest rates considered, $2 per M for Douglas fir and western red cedar, $3 per M for western white pine and sugar pine, and $0.50 per M for western hemlock, silver fir, and other species.

DEPOSIT.—$5,000 must be deposited with each bid, to be applied on the purchase price, refunded or retained in part as liquidated damages, according to conditions of sale.

FINAL DATE FOR BIDS.—Sealed bids will be received by the District Forester, Portland, Oregon, up to and including June 3, 1924.

The right to reject any and all bids is reserved.

Before bids are submitted full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the DISTRICT FORESTER, Portland, Oregon, or the FOREST SUPERVISOR, Albany, Oregon.

to what extent planting this species in this northern country will be attended by success. The trees will, of course, be put in under normal field conditions. In view of the fact that similar planting will be carried on in the redwood region, it will be possible by this northern experiment to draw direct comparison.

HOOVER HEADS NATIONAL PARKS ASSOCIATION

Herbert Hoover is the newly elected President of the National Parks Association, succeeding Dr. Charles D. Walcott, whose retirement was forced by his own increasing responsibilities. In his letter of acceptance Mr. Hoover said:

"The defense and preservation of our national parks is a most worthy effort. Their stimulative, educational, recreational values are, all of them, of vital importance to all of our citizens. Recreation grounds and natural museums are as necessary to our advancing civilization as are wheat fields and factories. Indeed, I should like to see the association not alone devote itself to defense of the areas that have been set aside by our government for perpetual use in these purposes, but to expand its activities in the promotion of other forms of recreational areas.

"The interests of the million of automobile campers and tourists who now annually visit our parks should be even further advanced by the reservation for them of camping grounds and other recreation opportunities in the public lands and forests. Such areas need not be so large or under the vigorous control which must apply to our national parks, yet they could be greatly increased and helped by the government, especially in co-operation between the Federal Government and state governments."

SENATE APPROVES APPROPRIATION FOR SOUTHERN FORESTRY

Early in April the Senate passed Senate Bill 824, which would provide $50,000 for the Southern Forest Experiment Station. Advocates of the bill are thus encouraged in the belief that the way is clear for the passage of the bill by the House. This action by Congress would give the South financially the strongest forest experiment station in the United States and would be a vital force in bringing about forestry in the South.

It is pointed out that the southern pine region is capable of growing about one-fourth of the entire nation's timber supply of the future. Timber-growing, lumber and paper manufacture, and turpentine—all vitally dependent on the southern pine forests—will be among the pine industries of the South for all time to come, if the South's forest land is wisely managed. With every increasing lumber demand by the Northern States on the one hand and with vast areas of land admirably suited to timber-growing on the other hand, forestry undoubtedly means more to the South in the way of industrial progress than to any other section of the United States.

It is essential, therefore, that the South learn as rapidly as possible how to grow timber and how to manage and protect it from youth to maturity. That is the main purpose of the Southern Forest Experiment Station. It is just as necessary to forestry as an agricultural experiment station is to good farming. A forest experiment station, by developing the art of growing timber, will save much blundering, waste, failure, and discouragement, and it will be a stimulant to land-owners to devote their land to timber-growing. Public agencies interested in reforestation, industries dependent on the forests, and land-owners are called upon to unite in urging the passage of the bill upon members of the House.

STATE APPROPRIATIONS FOR FORESTRY

During 1923 thirty-two states having forestry departments appropriated a total of $5,410,000 for forestry work, of which $2,441,000 was appropriated by eighteen states for the purchase and maintenance of state forests, $1,727,000 by twenty-eight states for fire protection, $607,000 by nine states for insect and disease protection, $212,000 by eighteen states for nurseries and planting, and the remainder chiefly for administration and publicity. These figures were compiled by the United States Forest Service. As compared with the appropriations for 1921, the net increase, after deducting the item for protection against insects and diseases, was $738,000.

Two states make their initial appearance in the 1923 statement—New Mexico, with a small sum available for fire protection, and Alabama, with a special forestry fund of $50,000, derived from privilege license taxes.

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MASTER PRINTERS
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Arizona Cypress and Weeping Juniper

[*Continued from page 274*]

ing in its native, far-away mountain home. Here it grows at elevations of from about 5,500 to 6,500 feet, sometimes in deep, narrow, well-watered canyons and sometimes on the driest of rocky ridges. In canyon bottoms it attains its greatest beauty, its characteristic drooping twigs often becoming nearly a foot long, in this habit reminding one somewhat of the weeping spruce

OCOTILLO
(*Fouquiera splendens*)

(*Picea breweriana*) of the Oregon Coast mountains. In these protected places the weeping juniper may reach a height of 30 to 40 feet, with a clear trunk of 10 or 15 feet, with a sparsely branched open crown. On exposed dry rocky slopes and ridges the weeping juniper develops a dense, broad oval- or pyramidal-shaped crown with a very short clear trunk. It is then usually branched quite to the ground, but in such trees the drooping twigs are rarely over 6 inches long. The longitudinally furrowed trunk bark is of a cinnamon brown when not exposed to strong sunlight, in which, however, it becomes grayish or reddish brown.

The soft, straight-grained wood, apparently very durable in contact with soil, is locally used for fence-posts and for mining props, considerable of this timber having been packed out on mules and burros for these purposes. But, fortunately, general inaccessibility of this rare tree has prevented an extensive use of the wood and probably will in the future.

The weeping juniper is essentially a Mexican species, ranging over dry hills of northeastern Mexico at elevations of from 6,000 to 8,000 feet. It was first discovered in Mexico by a German botanist, Schiede, in 1830, while it was not found in the Chisos Mountains until 50 years afterward, by a United States Army surgeon, Dr. Valéry Harvard. The French botanist Carrière informs us that this juniper was brought to Europe in 1838 for purposes of cultivation. Elwes and Henry ("The Trees of Great Britain and Ireland") speak of a tree 40 feet high and over 3 feet in diameter growing at Bicton, and it is said to be occasionally cultivated in southern France and in Algeria. One or two trees are also said to be growing in the botanic gardens of Genoa and Naples, Italy. Doubtless all of these foreign-grown specimens were produced from seed brought from Mexico. The writer does not know that the weeping juniper has ever been cultivated in the United States.

Its unique and beautiful drooping habit makes it one of the most attractive of junipers for ornamental purposes. Probably, however, it would not thrive outside of our subtropical regions. Its ability to maintain itself on dry, rocky slopes and ridges, as well as in better-soiled and moister situations in its native habitat, seems to indicate a wide adaptation to different soil conditions.

A Forest Without Benefit of Clergy

[*Continued from page 290*]

In addition to the Bryan home, modern in all respects and one of the show places of the country, the estate contains many quaint summer cottages which housed the friends of the late sage, who visited him at all times of the season.

Rated as a millionaire, at his death it was learned that he had started as an humble gatherer of soap grease, and from his manufacture of soap had built up a big business, which he later sold out at a large figure, holding only a substantial interest in a nationally known soap concern of Cincinnati.

John Bryan has left a monument to himself which will endure for ages to come. He has been the means of providing his state and the country at large with a plot where valuable forest and other experiments will be made and where a playground of exceptional beauty and attractiveness will be used by thousands of people in the years to come.

TO SAVE TIMBER BY CUTTING WASTE

What is intended to be a vast drive to aid in the natural reforestation of thousands of acres of cut-over timber lands in Wisconsin, now standing idle and a burden to taxpayers, by means of concerted action on the part of the pulp and paper manufacturers, the lumber interests, all wood-using industries, fishermen, guides, and the general public, was inaugurated Wednesday, March 12, at a meeting of the Wisconsin Forest Protective Association at the Congress Hotel, Chicago. It was pointed out that by far the greatest loss and damage to the little second-growth trees each year is caused by the ravages of forest fires, and the meeting was for the purpose of enlisting the aid of all who are interested in a campaign to prevent such losses. D. C. Everest, of the Marathon Paper Mills Company, Rothschild, Wisconsin, president of the recently organized association, presided.

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ZENITH OF LUMBER PRODUCTION IN WEST CLOSE AT HAND

"In a decade the Pacific Northwest will have reached its zenith and started down hill, and two decades hence we will doubtless be producing below our present volume, probably not over eleven billion feet for all the Pacific States," R. W. Vinnedge, a vice-president of the National Lumber Manufacturers Association, recently told the students at the Yale Forest School. "This indicates that twenty years hence the nation's annual consumption of lumber will have fallen to twenty-five billion feet.

"Nor can even the most frantic efforts towards reforestation change the situation within that time. The Pacific coast, by reason of the natural reproduction of its species and its eminently favorable climatic conditions, is ideal for growing trees. At present there are nine million acres in the State of Washington and half as many more in Oregon suitable for reforestation.

"With the surge of sentiment, both among our lumbermen and our public generally, in favor of an immediate practical forest policy, these acres, or most of them, will in twenty years undoubtedly be covered with regrowth, protected by a workable forest law, but another generation in time must be added before the first of the crop can be harvested, and in the interim the nation's consumption will necessarily decrease.

REINDEER TO BE CROSSED WITH WILD ALASKAN CARIBOU

There are probably about 250,000 reindeer in Alaska, and it is expected that the reindeer herds will become the basis of an important future industry of the territory. The Biological Survey of the United States Department of Agriculture has undertaken to encourage the industry by studying the diseases of the reindeer, food and range problems, methods of handling, and particularly the improvement of the herds in size, vigor, and meat-producing qualities.

To this end a special worker from the Biological Survey, Olaus J. Murie, has spent the past three years investigating the caribou herds in northern Alaska with a view to locating the large-sized caribou, in order to capture bulls for crossing with the reindeer. As reindeer are, in fact, domesticated caribou, it is expected that herds can be greatly strengthened in this way.

TIMBER USED IN MINING

The Pennsylvania anthracite region, considered as a single mining district, is by far the largest user of mine timber of any mining district, either coal or metal, in the United States, and the bituminous districts of Pennsylvania rank second. The present annual consumption of mine timber by the coal-mining industry of Pennsylvania probably exceeds 100,000,000 cubic feet annually. In 1920 Pennsylvania produced, in round figures, 170,600,000 short tons of bituminous coal and 79,990,000 long tons (89,500,000 short tons) anthracite. If it be assumed that the bituminous coal mines required 0.33 cubic foot, anthracite mines 0.7 cubic foot per ton mined, the timber requirements were: bituminous, 56,298,000; anthracite, 62,850,000, or a total of over 119,000,000 cubic feet.

The average cost of round mine timber in the anthracite region in 1905 was, according to the U. S. Forest Service, 6.6 cents per cubic foot and $15 per 1,000 board feet for sawed timber. The present cost has advanced to 27.5 cents per cubic foot for round timber, delivered to the mine, of which cost 57.3 per cent represents freight charges.

In the anthracite region 20 to 25 years ago the best grades of white and red oak, chestnut, and pitch-pine timber could be obtained locally. The major part of the timber used was hardwoods. The softwoods used were principally yellow pine, the remainder being mostly hemlock and spruce. Even at that time much of the yellow pine was shipped in from the South, although most of the other timber was obtained in Pennsylvania. At present perhaps 75 per cent or more of the timber used in the anthracite region is softwoods, such as loblolly pine and second-growth yellow pine, which is largely shipped in from the South. The average timber now being used is much inferior to that used 20 years ago.

As an interesting sidelight on the timber situation, it is creditably reported that some anthracite operators have had trial shipments of Douglas fir brought by ships from Oregon by way of the Panama Canal, with a view to trying out the use of Douglas fir for certain places in the mine, in competition with the timbers now obtainable from the near-by southern states.

ENTER UTAH BLACK WALNUT

Fifty-seven years ago a sack of walnuts was brought across the plains and were planted at Riverdale, Utah, in a long line for a windbreak. The trees were planted close together, and where none of them died out they stood so thick that vigorous growth was impossible. Last week this line of trees was cut down and the owner finds himself with 4,000 feet of first-class black walnut logs. He has made arrangements to have them hauled 15 miles to the nearest sawmill, at Huntsville, where they will be cut up into lumber, which has been contracted for by a local Ogden lumber yard. Thus does Utah black walnut enter the market.

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For further particulars address,

Francis G. Miller, Dean

A UNIQUE JOB

Counting lightning bolts as they strike and set fire among the mountain forests is the latest job of the United States Forest Service fire lookouts stationed on high peaks in the Sierra Mountains of California and the northern Rockies of Idaho and Montana.

"A single lightning storm will sometimes cause over 300 forest fires in the National Forests of California," said Mr. Kotok, "and these bunched fires in the high mountain country cause the breakdown of the fire-protective organization. If we can predict lightning storms even four or five hours in advance, we can mobilize cattlemen, prospectors, woodsmen, sheepherders, and other residents of the mountains to help put out the multitude of fires the lightning sets."

Hundreds of fire lookouts in the western mountains have been instructed by the Forest Service to keep records of lightning storms, the place of origin, their direction, the number of bolts of lightning, and the number of fires set.

ILLINOIS COLLEGE TO MANAGE ITS FOREST LAND

Much interest is being shown in planting in Illinois this spring and it is felt by State Forester Miller that this could be greatly stimulated if the state were able to furnish planting material at cost to those desiring it. Many are interested in the planting of black walnut.

Blackburn College, Carlinville, Illinois, has a tract of 900 acres of land near Gillespie, in Macoupin County, partly covered with timber, and steps are being taken to have this managed by the Natural History Survey on a co-operative basis, allowing it to be used for a demonstration forest in return for advice and assistance in handling it. This is in a coal region, where there is not much of a market for cordwood, but there is a good market for mine props, bars, legs, and mine ties.

A MILLION AND A HALF VISIT THE NATIONAL FORESTS OF WASHINGTON AND OREGON IN 1923

There were 1,576,290 visitors in 1923 on the twenty-two National Forests of Oregon and Washington. The National Forests of the Pacific Northwest thus again prove themselves to be great summer playgrounds. Forest officers believe the above estimates of visitors to be very conservative. This number of people fished, camped, picnicked, hunted, or traveled on the 27 million acres of the National Forests and represent an increase of 546,318 over the 1922 figures. The above figures are for National Forests only in Washington and Oregon and do not include visitors to the National Parks in the two states.

The New York State College of Forestry
Syracuse University
Syracuse, N. Y.

THE State Forest Experiment Station of ninety acres at Syracuse, the Charles Lathrop Pack Demonstration Forest of 1,000 acres at Cranberry Lake (home of the Sophomore Summer Camp), three other field experiment stations, the Roosevelt Wild Life Forest Experiment Station, a modern pulp mill, a well-equipped sawmill, a complete dry-kiln plant, the biological laboratories, and an excellent reference library afford unusual opportunities for investigative work. A four-year course in Pulp and Paper Manufacture and a short course each spring in Dry-kiln Engineering and Lumber Grading are regularly given. In addition to the regular four-year undergraduate courses, special courses are offered that lead to the degrees of Master of Forestry, Master of City Forestry, Master of Science, Doctor of Philosophy, and Doctor of Economics.

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For further information and catalogue address: The Dean of the School of Forestry, New Haven, Connecticut, U. S. A.

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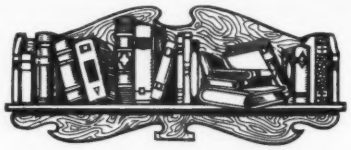

BOOK REVIEWS

NORTHERN WOODLOT TREES. By James Berthold Berry, M. S. World Book Company [Chicago]. Price, $2.00.

Designed not only to be of use in the study of farm woodlands, but to have a much wider application, this book should be an important aid in the subject of tree and wood identification, and is illustrated with this in view. It will enable the student to recognize all the important trees occurring locally and to speak intelligently of the character and uses of the wood. The authors believe that a study of trees tends to foster sympathetic interest in their adequate protection, and it is with this in mind that the book has been compiled.

JACK MINER AND THE BIRDS. By Jack Miner. Manly F. Miner [Ontario, Canada]. Price, $3.00.

This book covers all Jack Miner's experiences with birds, written by himself, in his own characteristic way, interspersed here and there with quaint Jack Minerisms and bits of philosophy. The book tells how and why he became interested in birds and describes how his work with his feather family has grown. It makes no pretensions to literary excellence and is almost laconic in style. It contains much valuable information, expressed in apt and witty language, and will prove a valuable addition to our works on bird lore. The illustrations are of particular interest and portray the methods he uses with the birds, greatly clarifying the points in the story.

THE BIG HIKE. By John H. Hauberg, LL. B. Published at Rock Island, Illinois.

A most interesting account of the values of a movable vacation camp, which transports the party from place to place, for instruction and recreation, instead of spending the full time at a fixed camp.

THE STORY OF THE OAK TREE. By Mrs. Ezra Bowen. Chemical Publishing Co. [Pennsylvania.] Price $1.50.

A little book, written to fill the need of a school reader about Nature which would give more than the mere sentimental aspect of the life of the bunny, the violet, and the rose. So the author chose to trace the life of an oak as the most outstanding example of the continuous story of some living thing. And she has described in the most delightfully interesting way the community of all things, both animate and inanimate, in Nature's wonderful scheme.

PENNSYLVANIA TREES. By J. S. Illick.

The demand for this well-known book has been so great that the fourth edition has just been issued. The four editions comprise some 25,000 copies in all, and their rapid exhaustion is a testimonial to the value and wide use of the book.

ZOOLOGICAL LEAFLETS

The following brief mention is made of an interesting series of leaflets recently issued by the Chicago Field Museum of Natural History:

No. 1. THE WHITE-TAILED DEER. By Wilfred H. Osgood.

A general account of the habits, distribution, and relationships of the common deer of the United States, known to many as the Virginia deer.

No. 2. CHICAGO WINTER BIRDS. By Colin C. Sanborn.

Includes description of a variety of bird haunts within the Chicago area, and discussion of the species to be observed in special localities during the winter season.

No. 3. THE AMERICAN ALLIGATOR. By Karl P. Schmidt.

An interesting miniature monograph of America's largest living reptile.

No. 4. THE PERIODICAL CICADA. By William J. Gerhard.

This leaflet describes and illustrates the various stages of the periodical or Seventeen-year cicada, more commonly known as the seventeen-year locust. It gives a general account of its development, and the destructive nature of the egg-laying habits of the adult females.

No. 5. THE ALLIGATOR GAR. By Alfred C. Weed.

A treatise on one of the few fishes living today which seems to belong to past ages rather than the present.

No. 6. THE WILD TURKEY. By John T. Zimmer.

A brief study of the wild turkey, progenitor of the domestic breed, which was once abundant over eastern and southern North America, but is now restrictetd to the Southern States and Mexico. Six varieties are known, each occupying a distinct region.

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Facts For Advertisers

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Officials and owners of industrial plants (other than wood-using)	8.10
Libraries	4.19
Dealers and salesmen (products other than wood)	4.04
Housewives	3.76
Officials and owners of wood-using industries	3.40
Schools and colleges	3.11
Farmers and ranch owners	2.82
Students	2.29
Clubs, societies and associations	2.24
Retired	2.03
Florists, nurserymen and orchard owners	1.90
Lumber dealers and salesmen	1.89
Public and government officials	1.69
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TREES

I think that I shall never see
A poem lovely as a tree.

A tree whose hungry mouth is prest
Against the earth's sweet flowing breast;

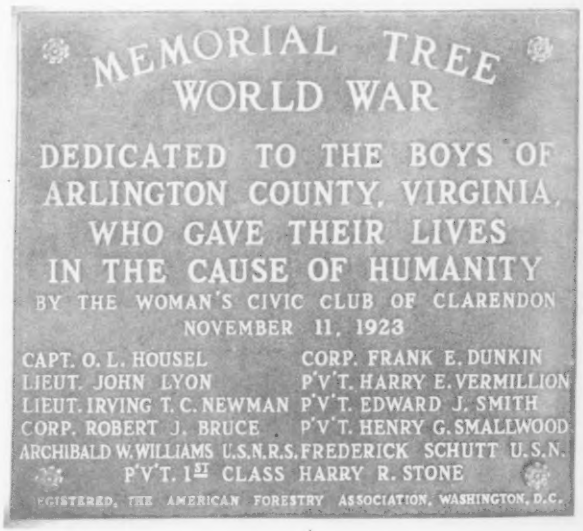
A tree that looks at God all day
And lifts her leafy arms to pray;

A tree that may in summer wear
A nest of robins in her hair;

Upon whose bosom snow has lain;
Who intimately lives with rain.

Poems are made by fools like me,
But only God can make a tree.

—JOYCE KILMER.
(Who gave his life in France.)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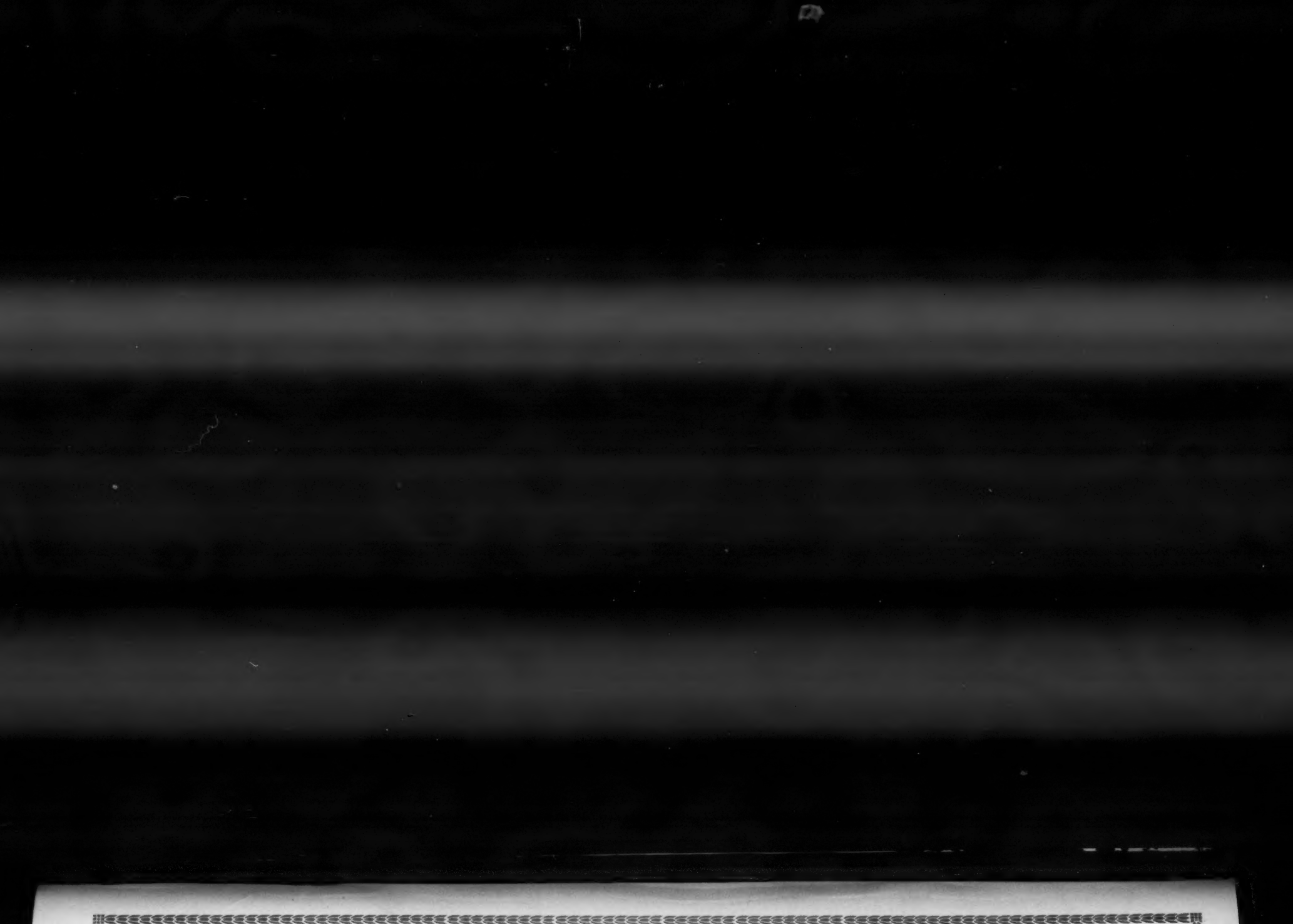
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